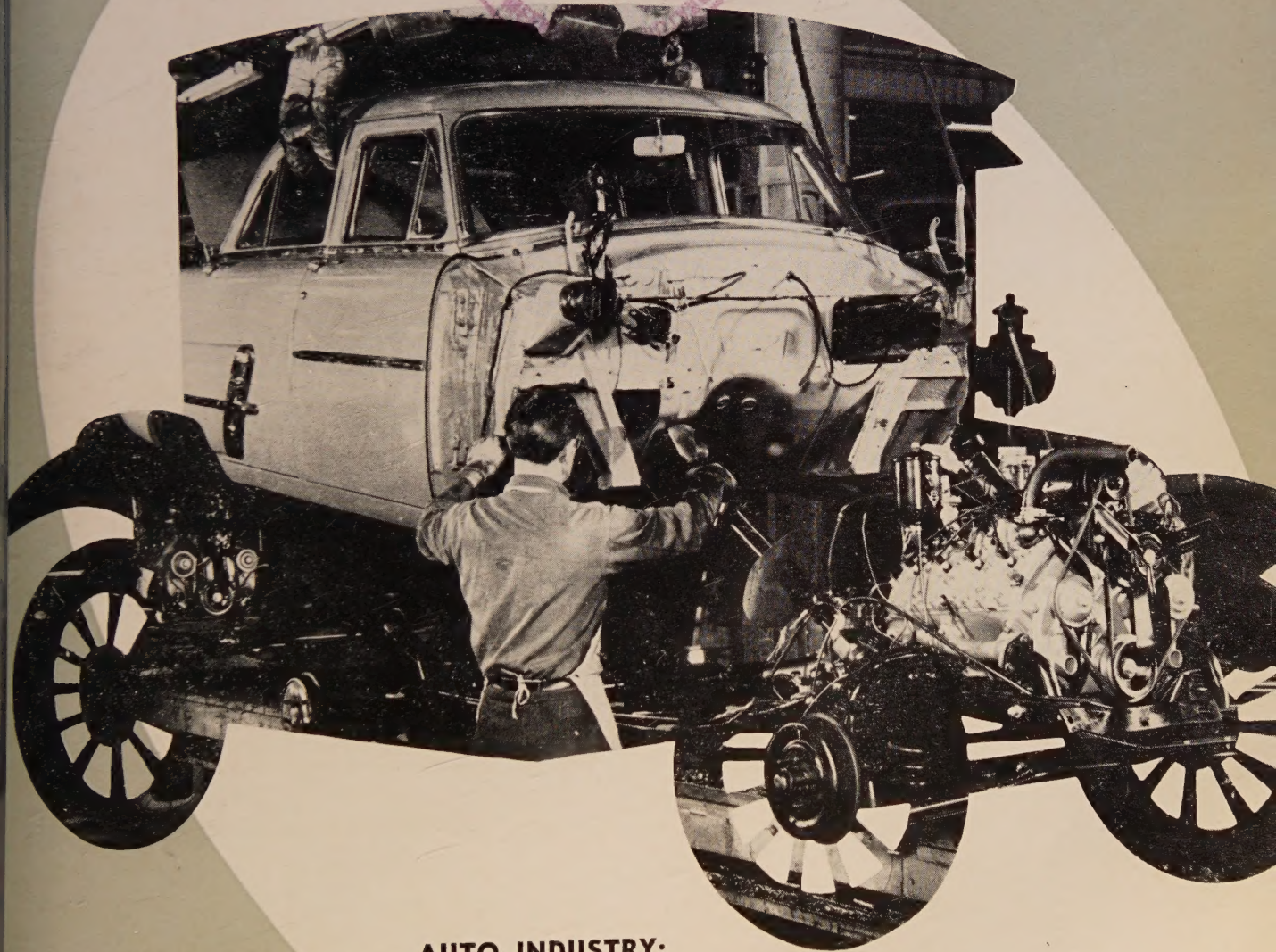


JUNE 1, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



AUTO INDUSTRY:

Cradle for Automation

More mass production gains likely in the next
10 years than in the past 50, p. 77

✓ **PURCHASERS PREDICT**
No Depression, Few Shortages, p. 65

✓ **PRE-PLANNING SCORES HIGH**
New Plant Doubles Production, p. 110

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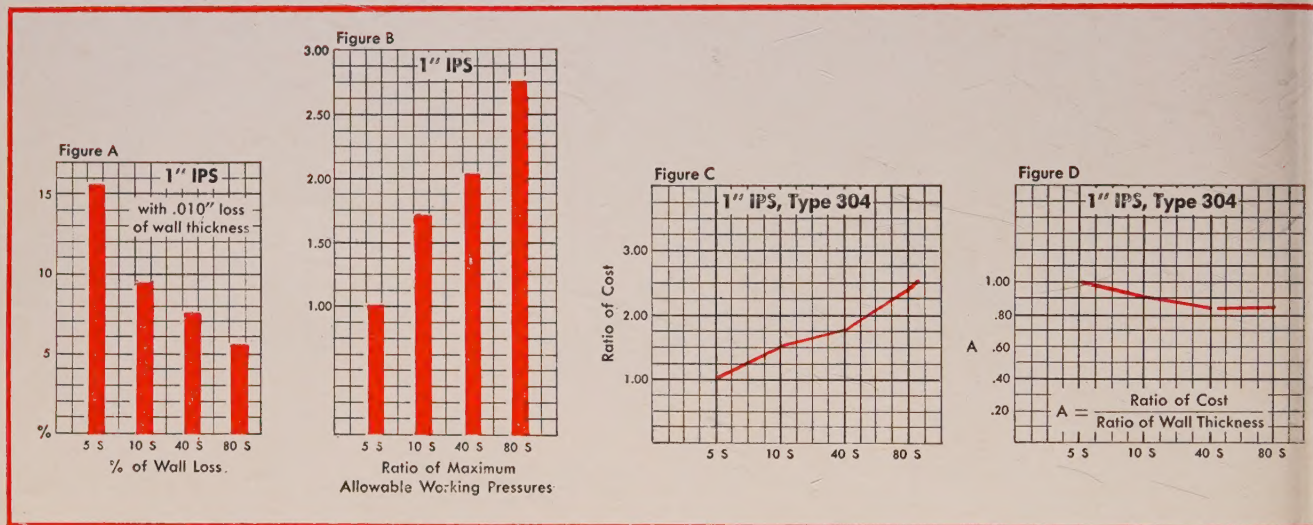
take a closer look at

Stainless STEEL PIPE SIZE Schedules



Don't be "penny wise and pound foolish" where stainless steel piping is concerned. The most economical choice does not always imply the least initial cost as working pressure, methods of joining, installation costs and allowance for loss by corrosion

are critical factors. This is particularly true where costs resulting from failures in service—replacement of equipment and loss of production due to down time—may exceed the initial cost of the piping.



CORROSION RESISTANCE

For long service life it is advisable to allow for some loss in wall thickness where stainless piping is employed to combat severe corrosion. As shown in Figure A even a small loss means an appreciable percentage loss of wall thickness in the lighter weight schedules.

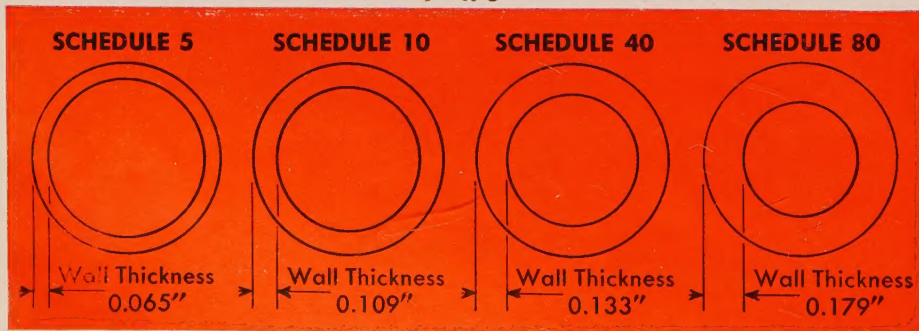
WORKING PRESSURES

As shown in Figure B, the heavier pipe schedules permit higher working pressures, thus perhaps permitting the use of smaller diameter piping, or offering greater flexibility for subsequent changes in operational procedures.

COSTS

Although the lighter schedules cost less, as shown in Figure C, you actually get more for your money with the heavier schedules because the ratio of increase in cost is less than the ratio of increase of wall thickness (Figure D).

1" IPS



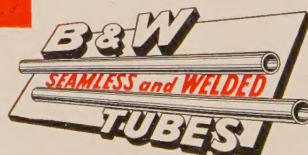
While various types of fittings are available for the lighter weight pipe schedules, they should be examined carefully as to initial cost, installation cost, working pressure permitted and ease of adaptation to existing lines.

Whatever your stainless piping problems, Mr. Tubes—your B&W Tube representative—can provide valuable assistance. Consult him for advice on the stainless piping or tubing that will afford optimum cost-life ratio under your service conditions.

Methods of Joining & Installation Considerations

From the standpoints of economy and ease of installation, it is extremely important that attention be given to methods of joining, fittings, etc. because:

1. Schedule 40 IPS is the lightest weight pipe specifically designed for threading.
2. Fittings which provide a good thread can also afford structural strength at the joint not commercially available for lighter weight pipe.
3. Field welding of thin wall pipe is difficult.
4. Misalignment of connections can cause high installation costs.



THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

after 5 years' exposure

this is Carbon Steel



this is Mayari R



The upper portion of this unretouched photograph shows a cross-section of a carbon steel sheet, and the lower portion shows a Mayari R sheet, after identical exposure. Both sheets were of the same thickness when originally exposed to the atmosphere. The photograph is approximately 4 times actual size.

Mayari R, Bethlehem's low-alloy, high-strength steel, has 5 to 6 times more resistance to atmospheric corrosion than plain carbon steel . . . and 2 to 4 times as much as copper-bearing steel.

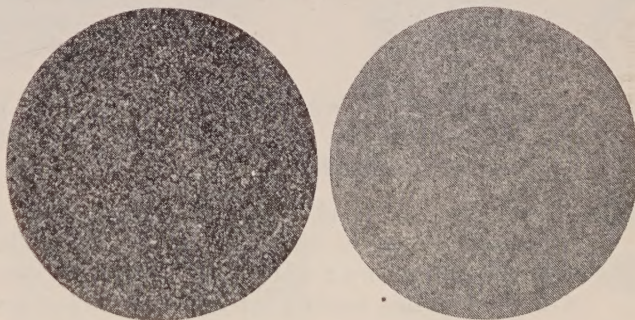
These figures are the findings of extensive tests conducted in different types of atmosphere. They have been confirmed in practice by applications that range from railway hopper cars to pole line hardware.

Here's the reason why Mayari R has such excellent corrosion-resistance. When it is exposed, a thin, tight layer of rust forms on the surface to act as a protective coating. This rust does not flake off in the manner of carbon-steel rust. Instead, it holds securely to the surface and retards any further corrosive action.

Another interesting feature of Mayari R is its superior ability to retain paint. Tests show that primer paint will last 20 to 80 pct longer on Mayari R than on carbon steel, depending upon the type of primer used.

Mayari R has other advantages, including higher yield-point and greater tensile-strength than are found in ordinary steel. These features contribute to longer life, lower maintenance and improved design of equipment and structures.

For more information about Mayari R, its properties and its recommended applications, call or write any of our sales offices and ask for a copy of Catalog 259.



Surface views of the same test specimens as shown in the upper photograph. After 5 years' exposure the Mayari R (right) is relatively smooth while the carbon steel (left) is rough and deeply pitted.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation



Mayari R *makes it lighter...stronger...longer lasting*

Will the product you plan to make...

..... *need*

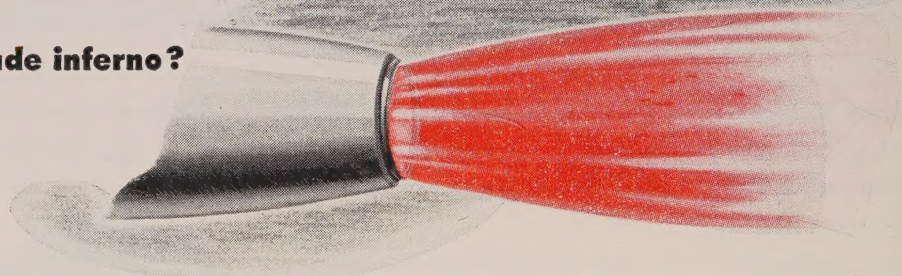
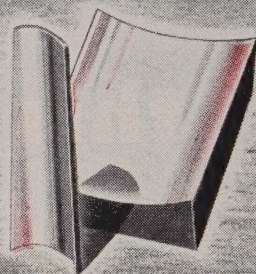
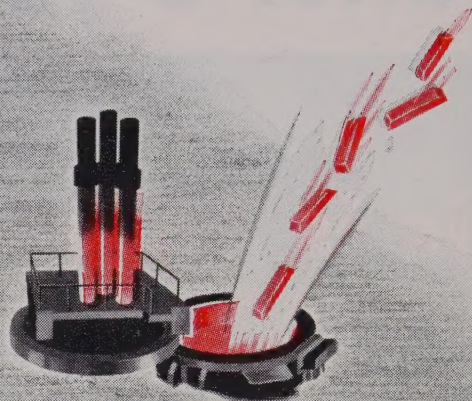
an alloy so tough you may not yet have heard of it?

..... *require*

a forged finish like plate glass?

..... *face*

a man-made inferno?



You may even have a twist or two of your own to add to the problem the Jet Division helped solve for jet aircraft engine builders . . .

The "buckets" (paddles) on the turbine rotor at the rear of a jet engine whirl around about 10,000 times a minute, pulsed by a white-hot blowtorch of flame. To withstand this roaring inferno, the bucket surfaces and curves must be forged even smoother than glass. They must be made of an alloy tougher than the toughest steel. They must "take" this red-hot ride for hours without stretching out, or "creeping", from centrifugal force and heat.

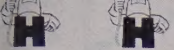
The Jet Division makes more buckets for America's engine builders than any other manufacturer. We forge super-strength alloys into finished parts so smooth and accurate that they need no costly, lengthy finish-machining or polishing.

If your product or product-to-come must meet one of these conditions . . . two . . . three, or, even a brand new one, it can pay you to get in touch with us now.

JET DIVISION
Thompson Products, Inc.

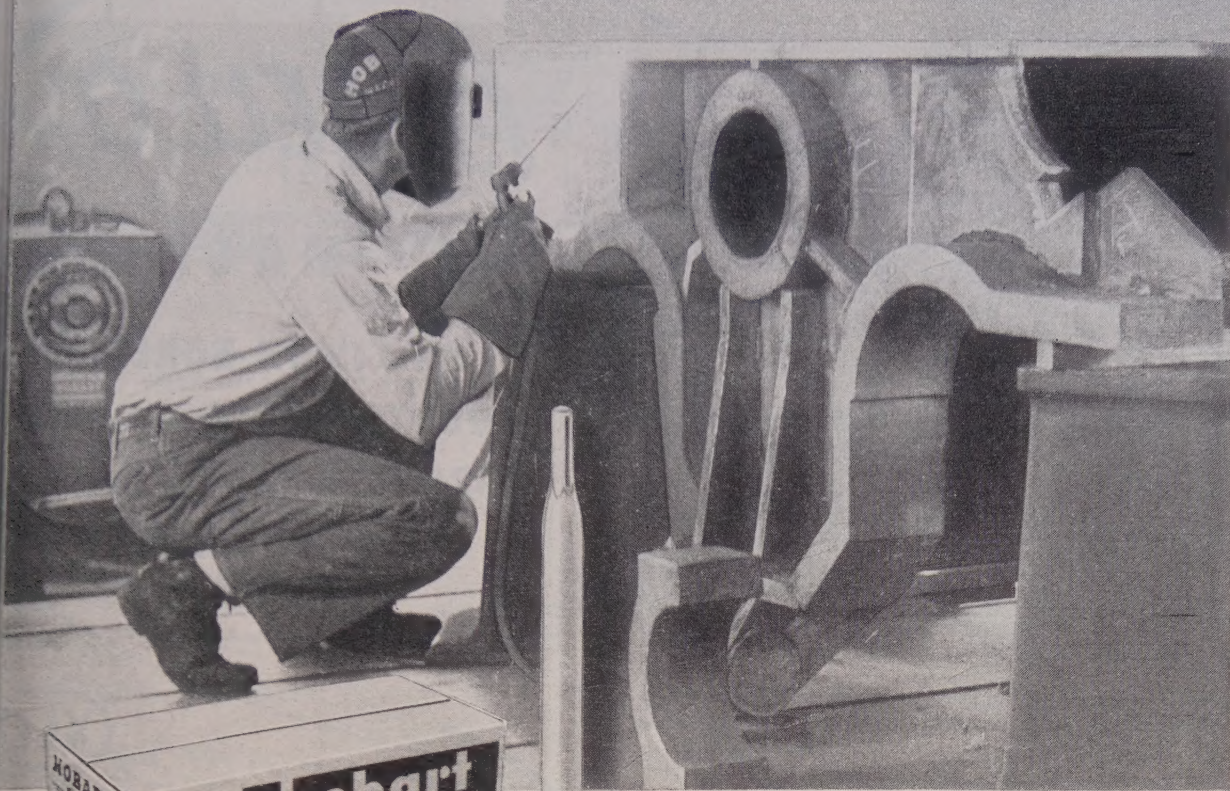
CLEVELAND 17, OHIO





HOBART ELECTRODES

“ONE OF THE WORLD'S LARGEST BUILDERS OF ARC WELDING EQUIPMENT”



for stepping up production

Try this No. 10 rod (E-6010), You'll find that this new and versatile all-position electrode gives you real welding ease—PLUS—deep penetration, high tensile strength and ductility, quick and easy slag removal, a stable arc and non porous welds.

Hobart No. 10 is widely used in structural work, ship building, pipe line construction. Its penetrating arc makes it ideal for welding galvanized plates.

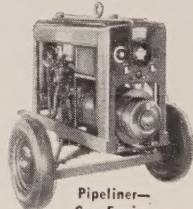
HOBART MAKES A COMPLETE LINE OF BETTER QUALITY ELECTRODES

Hobart welders with advanced engineering and rugged, heavy duty construction give you constant performance which is the first essential to profitable, lower cost welding.

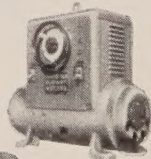
A model to fit every production requirement. Use coupon to get complete details.



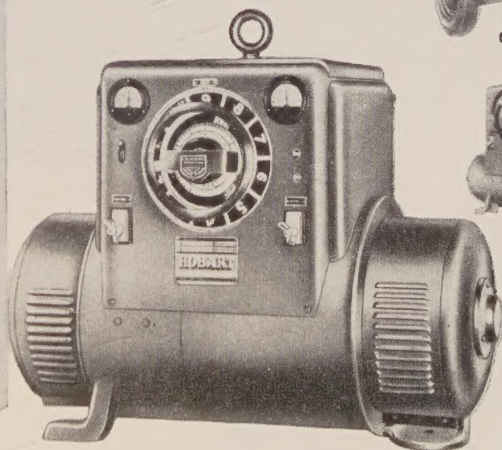
Gas Drive Welder
300 amp.



Pipeliner—
Gas Engine
250 amp.



Bantam Champ
(Electric)
200 amp.



Electric Drive
300 amp.



Hobart

Brothers Company

Box ST-63, Troy, Ohio

Mail this Handy Coupon Today →

FREE!

☐ "HOW TO GET BETTER WELDS."

Valuable new vest pocket booklet.

HOBART BROTHERS CO., BOX ST-63, TROY, OHIO

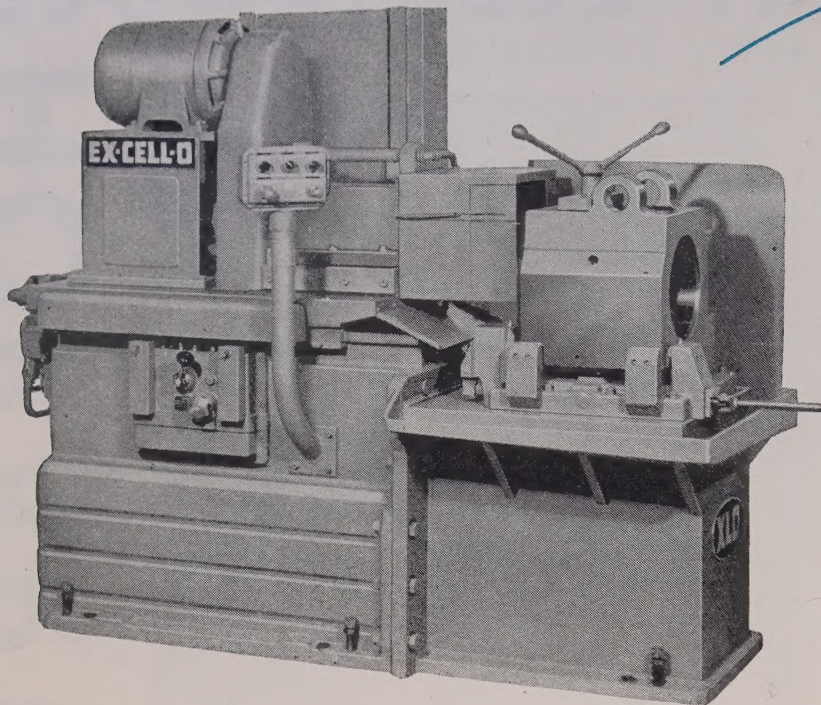
Without obligation, send information on items checked below:

☐ Electric Drive Welder ☐ Gas Drive Welder ☐ Pipeliner Welder ☐ Bantam Champ Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog ☐ Accessory Catalog.

NAME _____ POSITION _____

FIRM _____

ADDRESS _____



EX-CELL-O

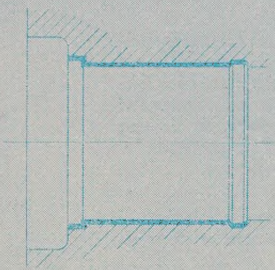
WAY MACHINE

**PRECISION BORES,
COUNTERBORES... AND
GROOVES A 600-lb.
STEEL FORGING**

Ex-Cell-O One-Way Precision Boring Machine is equipped for operations on a heavy gun part. The machine table carries a precision boring spindle with its drive equipment, and the end section supports the fixture.



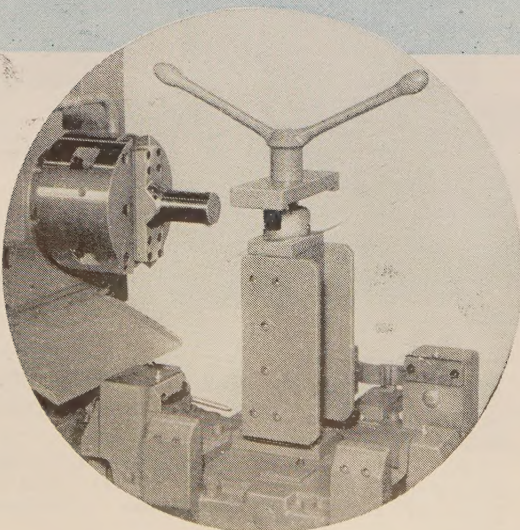
On a large gun part, operations shown in the heavy lines are performed in an automatic cycle.



As the table feeds forward the boring and

counterboring operations are performed, then the shoulder is plunge-faced at a reduced feed rate. When the table engages a positive stop the cross feed head plunges the grooving to the required depth, then the table feeds back to another positive stop which limits the width of the groove. The cross-feed head retracts and the table returns to the starting position.

Ask your local Ex-Cell-O representative about all the other advantages of Ex-Cell-O Way Machines, or write today for Bulletin 3160.



Close-up view of the cross-feed head on the spindle. It carries three tools for boring, counterboring, and grooving the heavy gun part in an automatic work cycle.




EX-CELL-O

CORPORATION

DETROIT 32, MICHIGAN

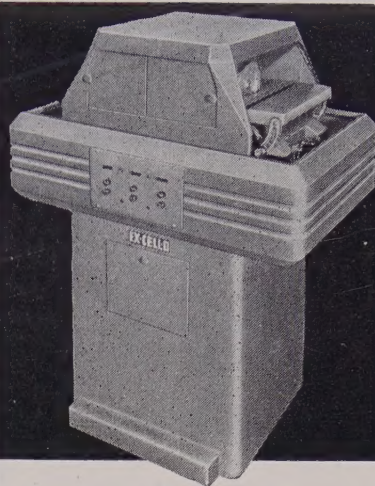
MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRBORNE
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

✓ NEWS ✓ PRODUCTION-ENGINEERING ✓ MARKETS

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This Sturdy Precision Tool Grinder

STYLE 44-A, is the newest in a complete line made by Ex-Cell-O for sharpening carbides, high speed steels, and cast alloys. All are double end models, equipped for face grinding on cup type wheels; for efficient and economical conditioning of single-point tools.

BULLETIN 46262, pictured below, shows and describes models for large plants or small shops; also gives important data on tool grinding. Ask Ex-Cell-O to send you a free copy. Write for it today.



53-27

For Better Work and Longer Life—

TOOL GRINDERS

BY

EX-CELL-O CORPORATION

Detroit 32, Michigan

MUNDT

a name with over 83 years experience ready to serve the industry at all times with the

PERFORATED

requirements necessary for your equipment, machinery or parts in any form or types of

METAL

or fibre, cardboard, paper, soundboards and other materials in a workman-like manner that

MEANS

lasting performance, better quality, and above all a product that will give you a

PERFECT

job for the particular purpose for which it is to be used, without defects, burrs or camber to

SCREENS

because our up-to-date equipment, plus our engineering counsel gives you nothing but the best.

**Specially
Fabricated for
ALL INDUSTRIES**

BY

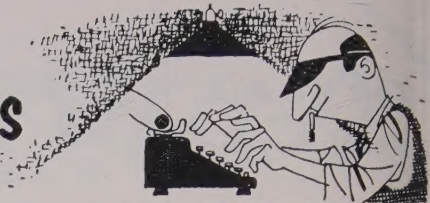
CHARLES MUNDT & SONS

53 FAIRMOUNT AVE.
JERSEY CITY 4, N. J.

PHONE—DELAWARE 3-6200

Send for Illustrated Catalog

behind the scenes



Better Reading, Better Writing

Because they believe that the ability to read better will help them write better, STEEL's editors are going back to school.

A guinea pig group of six editors will test the program beginning on June 14. If it works, others will enroll. Here's a brief description of what the course will do:

Science-educators have proven that most of us employ only 20% of our capacities to see and read. The Foundation for Better Reading, Chicago, has, through a unique program of planned individual study, trained thousands of businessmen in hundreds of nationally known companies to increase both their reading speeds and comprehension. Average improvement in reading speed has been 119% with a 9% increase in comprehension . . . all this in only 19 hours of home study.

After a series of preliminary tests to develop his present reading skills and capacities, the student reads books of his own choice with the help of an instrument which automatically paces him . . . much in the manner of the mechanical rabbit at the dog races. Another instrument teaches him to recognize numbers and phrases in as little as 1/100th second . . . thereby increasing his visual perception.

The basic idea is to train the student to read so that his eyes make fewer stops per reading line . . . so that he begins to see phrases, even sentences, rather than individual letters or words.

More reading in less time for STEEL editors means more time for better reporting and better writing.

Could be that there's the germ of an idea here for those of you who can't seem to find enough time for reading.

"Marital" Handling

A total of thirty-five editorial and business staff people representing STEEL, FOUNDRY and NEW EQUIPMENT DIGEST, all Penton publications, were in attendance at the Materials Handling Show in Philadelphia during the week of May 17-22.

Best story heard at the show was

the one told on Dan Cronin of the WLS Stamping Co. who, as a last resort after having forgotten his wife's birthday, sent her a check for One Million Kisses.

He was mildly shocked the next day when the missus sent him the following wire:

"Dear Dan, thanks for the birthday check. The milkman cashed it for me this morning."

Get Your Red Books Here

The fiftieth edition of the Great Lakes Red Book is off the press and ready for distribution. The Red Book is an annual listing of over 1500 vessels which ply the Great Lakes, including the names of ship owners, captains and engineers as well as ship building and repair yards along the Lakes.

In addition to being a complete port and shipyard directory, it lists the complete dimensions and capacities of all bulk freighters in the lake fleet.

We at Penton are proud of this useful pocket-size handbook and the useful function it serves.

Plug: Great Lakes Red Books are available now at \$1.00 per copy. If you ship via the Great Lakes waterways, you'll need and want this handy 235-page directory.

Write to Shrdlu. He'll put your order through.

More Daffynitions

The daffynitions continue to come. Add these to your growing list:

GOSSIP—a person with a keen sense of rumor.

INCOME—something you can't live without or within.

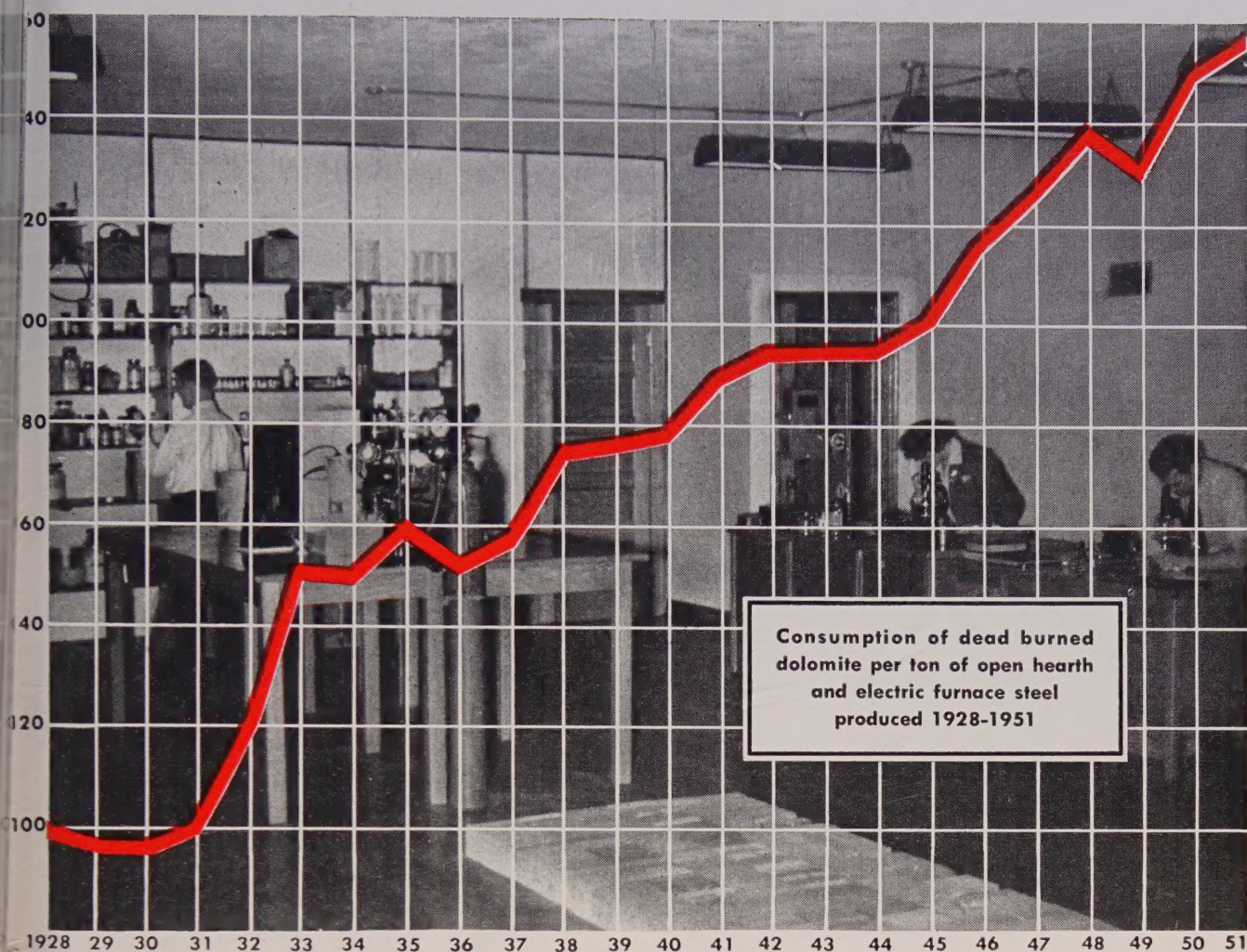
CRITICS—people who go places and boo things.

BORE—a person of small caliber.

This one has absolutely nothing to do with metalworking but we can't resist tossing it in.

RUMBA—foot loose and fanny free. Daffynitions are fun. Let's have more fun, please!

Shrdlu



quality standards in dead burned dolomite

WHEN introduced as a substitute for Austrian magnesite during World War I, dead burned dolomite usually contained excessive and uncontrolled amounts of silica, alumina and iron oxide. It left much to be desired as a refractory. To determine standards for an ideal refractory and to correct weaknesses in this pioneer product, Basic Refractories in 1922 established a research and development program.

Investigations established the reactions that refractories undergo in contact with basic open hearth slags. These findings, supported by studies of the thermochemical reactions involved in making dead burned dolomite, made it possible to set definite standards of quality, leading to continuous product improvement.

Today, the most dependable dead burned dolomites provide a maximum of the refractory oxides, crystalline

lime (CaO) and periclase (MgO), with just enough calcium ferrites and silicates to provide rapid setting in the furnace hearth. The crystalline lime component performs an important function in resisting siliceous slags formed in the early stages of a heat, while the periclase component has excellent resistance to the corrosive action of the basic slag formed later.

Manufactured to standards designed to satisfy actual conditions inside the furnace, dead burned dolomite has become America's preferred maintenance refractory—dependable in performance, low in cost, and plentiful in supply. Magnefer and Syndolag, trade names synonymous with quality in dead burned dolomite, can bring these benefits to every open hearth and electric steel producer. They are available in increased tonnages due to completion of our third major plant expansion in ten years.

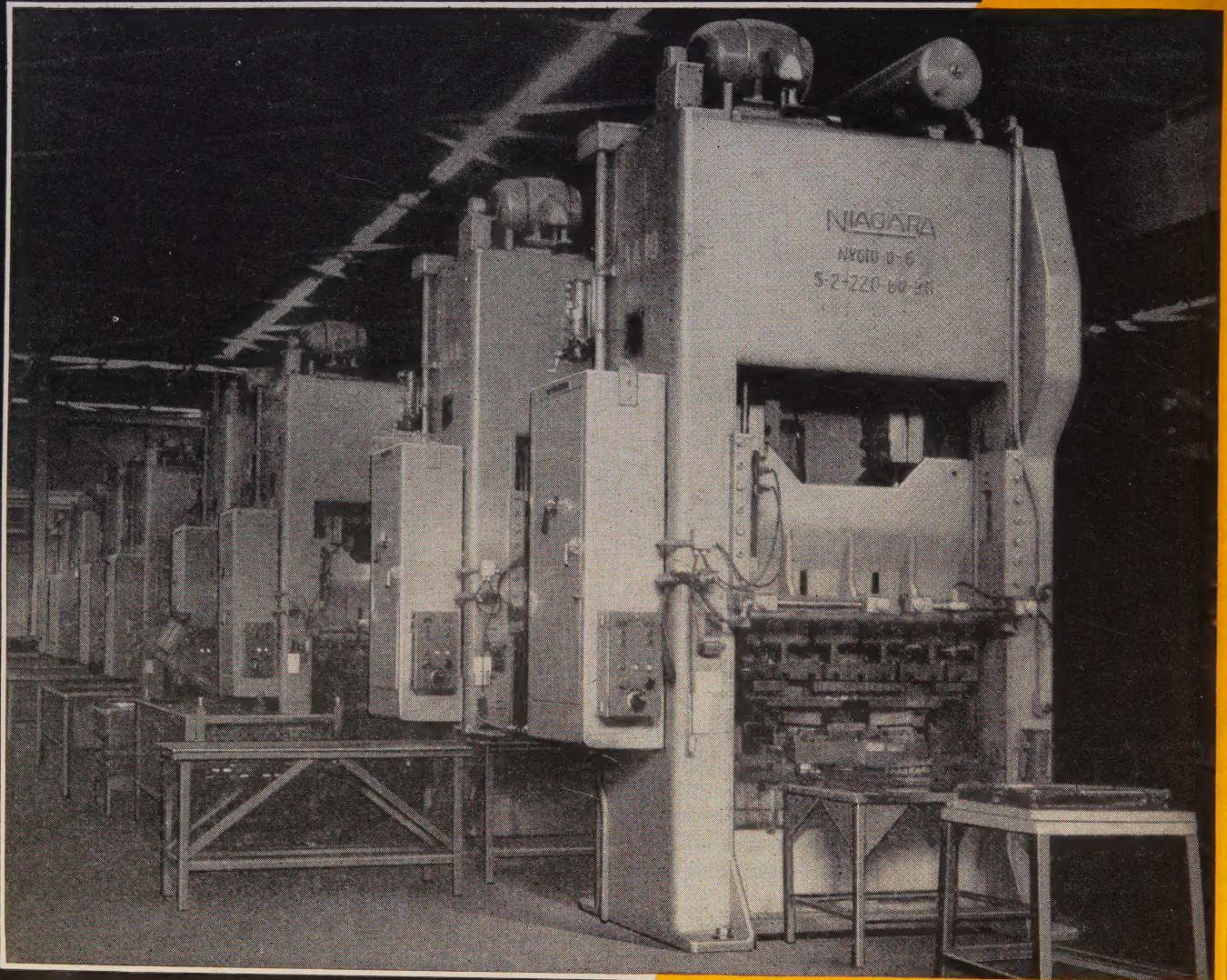


Basic Refractories Incorporated

845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

NIAGARA



Typical production line of
Niagara Straight Side Double
Crank Presses in one of America's
foremost automotive plants

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.

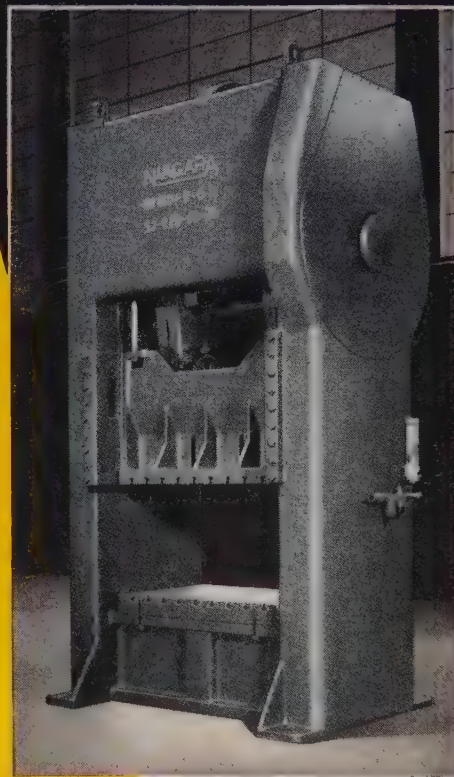
straight side double crank PRESSES

Speeding up Production in Large Automotive Plants

Niagara advanced engineering features and modern streamline styling combine to make these presses leaders in their field.

- ◀ Electrically welded steel construction
- ◀ Air actuated electrically controlled sleeve and friction clutches
- ◀ Anti-friction bearing mounting for high speed shafts, flywheel and clutch wheels
- ◀ Gearing enclosed and running in oil
- ◀ Neither gearing nor shafting overhang the working area to block light and be a potential danger
- ◀ Single and double geared
- ◀ Single or double end (twin) drive
- ◀ Adjustable air counterbalance for slide
- ◀ Pneumatic draw cushions with adjustable pressure and surge tank
- ◀ Wide range of sizes and capacities
- ◀ J. I. C. features if desired

Write for catalog

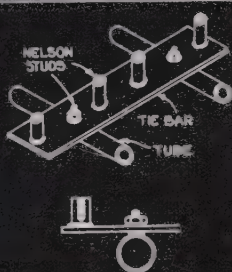
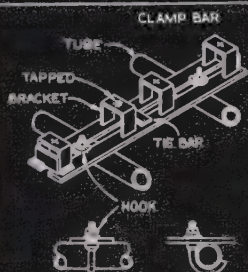


*Manufacturers of a complete line of sheet metal working equipment
ranging from small hand tools up to large power operated machinery.*

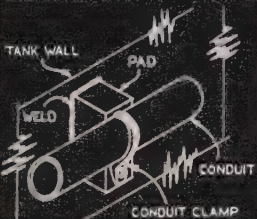
DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK

71% to 86% Savings by redesigning with NELWELD*

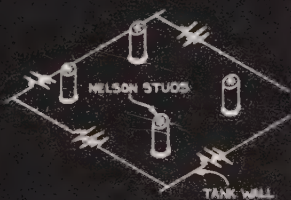
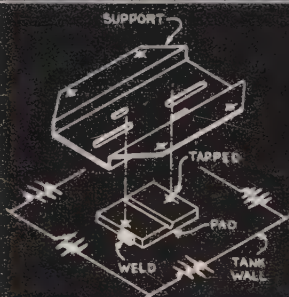
FORMER METHOD • NELWELD METHOD • RESULT



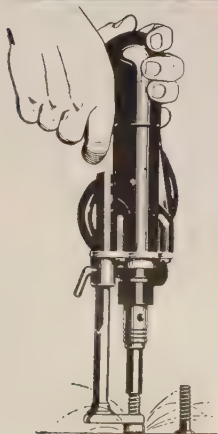
75%
SAVING
with
NELWELD



86%
SAVING
with
NELWELD



71%
SAVING
with
NELWELD



These substantial savings in fabrication costs were obtained when an electrical equipment manufacturer took advantage of the NELWELD method of fastening to redesign component parts. If you are now drilling/tapping or hand welding, chances are you too can . . .

**Cut fastening costs, gain important
corollary benefits—with NELWELD**

In addition to slashing direct fastening costs, NELWELD pays off with such important corollary advantages as: reduction in costly material handling . . . saving in steel by eliminating bosses, flanges, brackets . . . a saving in manhours required to assemble . . . increased production.

If you're ready to cut your costs, start by writing for the booklet, "How to Design for NELWELD."

*Trademark

Fasten it Better...at Less Cost, with

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

NELWELD

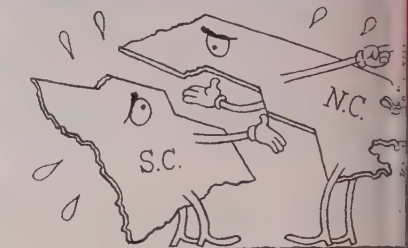


T. M. REG.

LETTERS

TO THE EDITORS

South Carolina in Doubt



Your article "Corporations Prone to Be a Valuable Source for State Taxes" (MAY 11, p. 79) is very interesting.

As you have listed approximately 10 per cent of the states in your "State Tax Income, 1952" chart, we assume you have the information on the other states. If possible, we would like to know the percentage of taxes on the various items you have noted for both North Carolina and South Carolina.

L. G. Mumma
Easterby & Mumma I. R.
Charlotte, N. C.

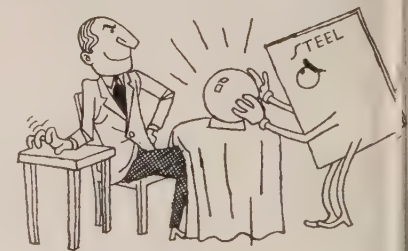
• STEEL's table was based on a preliminary report of the Bureau of Census and figures are not available for the state of South Carolina. In North Carolina, corporations paid 26 per cent of the state tax income in 1952; utility and insurance gross receipts, 10 per cent; personal income, 19 per cent; sales tax, 28 per cent and all others, 17 per cent. Write to the Bureau of Census, Department of Commerce, Washington for further information.—ED.

Research Interest Mounting

Your article "Recipe for Profit: Organized Research" (Apr. 27, p. 55) is excellently handled and is particularly interesting to us because of our increasing activity along these lines.

J. Carlisle MacDor
assistant to chairman
U. S. Steel Corp.
New York

Faulty Forecast?



Upon receipt of the May 4 issue of STEEL, I confidently called the Philadelphia office of Kaiser Aluminum & Chemical Co. to place an order for delivery in July or August in accordance with the rather charming cover of this issue, "In Sight: Supply-Demand Balance for Metals." Imagine my surprise and chagrin to find out that Kaiser sold out completely through October 1953!

It seems to me that in the interest of accuracy perhaps this particular cover

Please turn to page 12

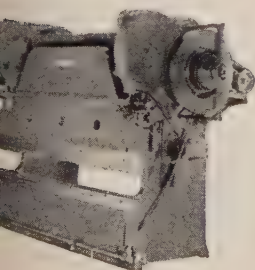
GIANT GEAR RIMS



Wedge action die for bending rings in horizontal position. Removable inserts adapt this die for various diameters.



s 35½" diameter,
face steel gear is
onomically pro-
ced by bending
l welding.



Just another job for versatile CINCINNATI PRESS BRAKES

This steel gear rim is completely formed from flat bar to ring in less than two minutes by repeated hits on a Cincinnati Press Brake.

The wedge action dies require but little tonnage to bend this 2" x 4" hot rolled 35-45 carbon steel bar.

The great versatility of the Cincinnati Press Brake eliminates the need for an additional and highly specialized machine on this small-run job.

Low cost and quick changeover from job to job are among the factors that will make Cincinnati Press Brakes profitable in your shop.

Write for Press Brake Catalog B-4.

Contact our Engineering Department, who will suggest and advise on your production problems.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES



This NEW METHOD DRIES AIR PRECISELY as you want it

- ▶ to control your product's quality
- ▶ to prevent condensation on your product or material
- ▶ to prevent changes due to moist air in contact with your product
- ▶ to protect your material from dampness
- ▶ to protect your processing of moisture-sensitive material
- ▶ to DRY your material or product
- ▶ to pack or store your product safe from moisture damage
- ▶ to get exact moisture control for the precise atmosphere condition you need
- ▶ to provide precise atmospheric conditions for testing
- ▶ to increase your air conditioning capacity
- ▶ to DRY large quantities of fresh air from outdoors

The Niagara's Controlled Humidity Method using HYGROL moisture-absorbent liquid is

Best and most effective because . . . it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always. Niagara machines using liquid contact means of drying air have given over 20 years of service.

Most reliable because . . . the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions.

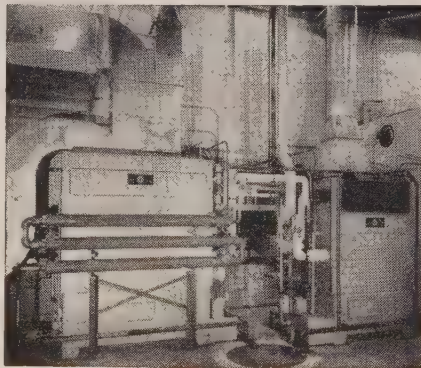
Most flexible because . . . you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Easiest to take care of because . . . the apparatus is simple, parts are accessible, controls are trustworthy.

Most compact, taking less space for installation.

Inexpensive to operate because . . . no re-heat is needed to obtain the relative humidity you wish in normal temperature ranges and frequently no refrigeration is used to remove moisture.

The cleanest because . . . NO SOLIDS, SALTS or solutions of solids are used and there are no corrosive or reactive substances.



Niagara Controlled Humidity Air Conditioning

This method removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the leaving air. Heating or cooling is done as a separate function.

For complete information write

NIAGARA BLOWER COMPANY

Dept. S, Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities of United States and Canada

LETTERS

Concluded from page 10

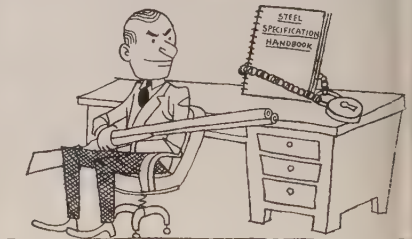
er should have been withheld for at least another three months. It is little Slip that Pass In The Night of this type which makes the value of STEEL a bit questionable. It is unfortunate since we, in our own organization, and many of the metal stampers in the Philadelphia area consider STEEL to be more or less the bible of the industry.

I though you might be interested in the reaction of a reader and a user of the raw material which you cover usually quite accurately in your fine publication.

C. G. Rose
Judson & Rose Inc.
Philadelphia

• Since receiving your letter, we have rechecked our information sources. This reappraisal leads us to the same conclusions as before. Aluminum can be ordered for July, the major mills tell us. That may not be true on a product or two in a few areas, but it's definitely true in general for the big producers. One aluminum company official flatly told us in our second round of inquiries: "Balance will come this summer if stockpile requests are reasonable." Don't picture our simplification of an extremely complex subject on a nationwide basis as worthless because of regional or product variances. We believe we are right in general. We sincerely regret, Mr. Rose, that we weren't right in your specific case.—ED.

Keeping the Handbook Handy



We recently decided to furnish 25 of our top shop men with STEEL, believing it would keep them in touch with present day matters and, in particular, the educational articles.

We have constant use of your publication entitled STEEL's Specifications Handbook, but have only one copy in the office which I maintain. However, we could use at least three additional copies.

Frank H. Cartwright
Maryland Drydock Co.
Baltimore

We have been subscribers to STEEL for a number of years and are one of your many admirers for the excellent job you are doing.

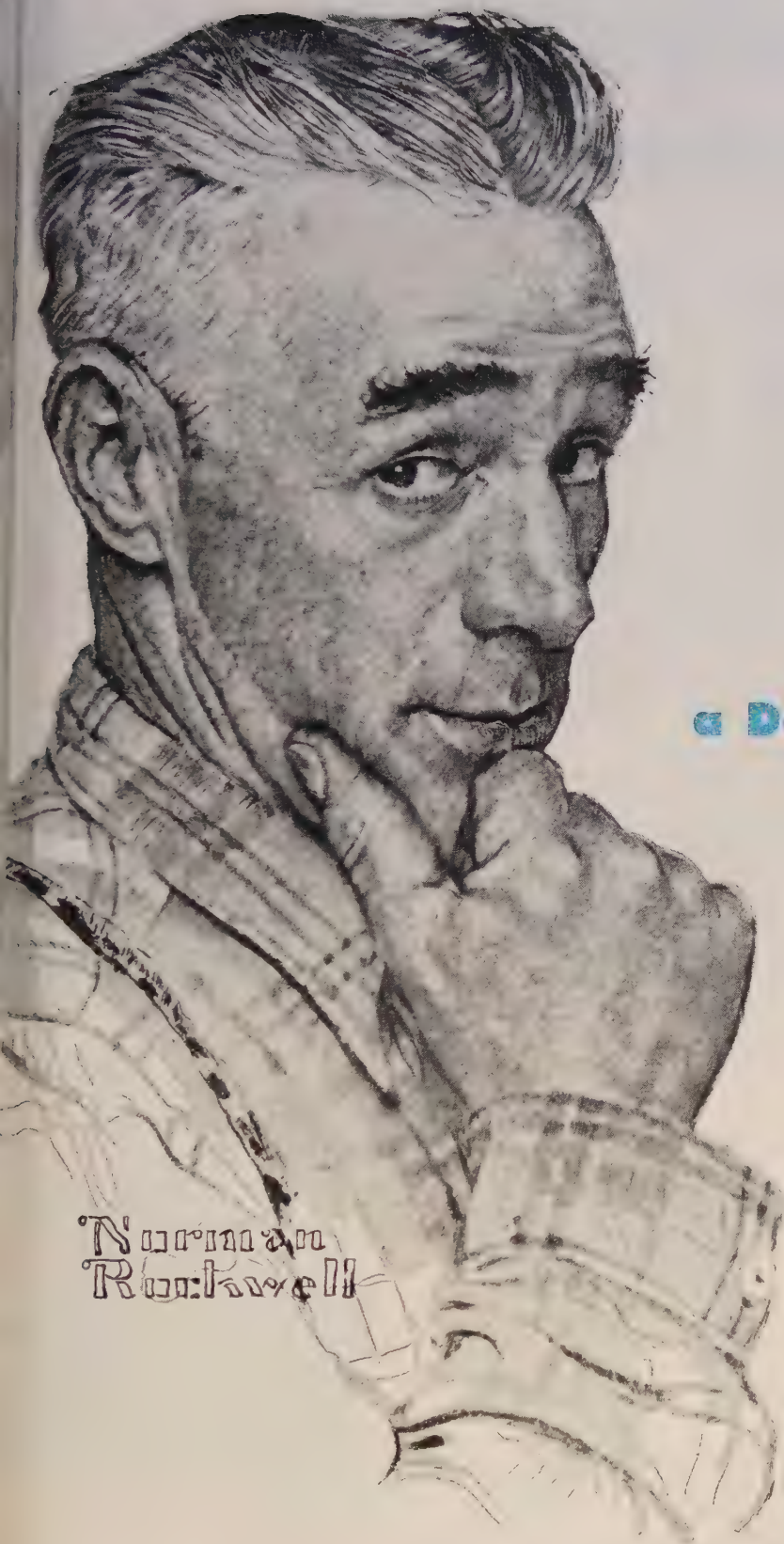
We have noted with interest your Specifications Handbook. We would be definitely interested in this Handbook for our library.

J. L. Builder
Rudisill Foundry Co.
Sylacauga, Ala.

Expert Comment

I am writing to tell you how much I enjoyed reading your article "How You Can Fight Corrosion" (Apr. 6, p. 102). This is a most capable and comprehensive job.

Kenneth Tate
Kenneth Tate Associates
Corapolis, Pa.



You?...

a Doubting Thomas?

IF YOU'RE a man who has to be shown, we're right in your corner. Just give Roebing "Blue Center" Steel Wire Rope one try...see for yourself how it saves time and costs you less on the job.

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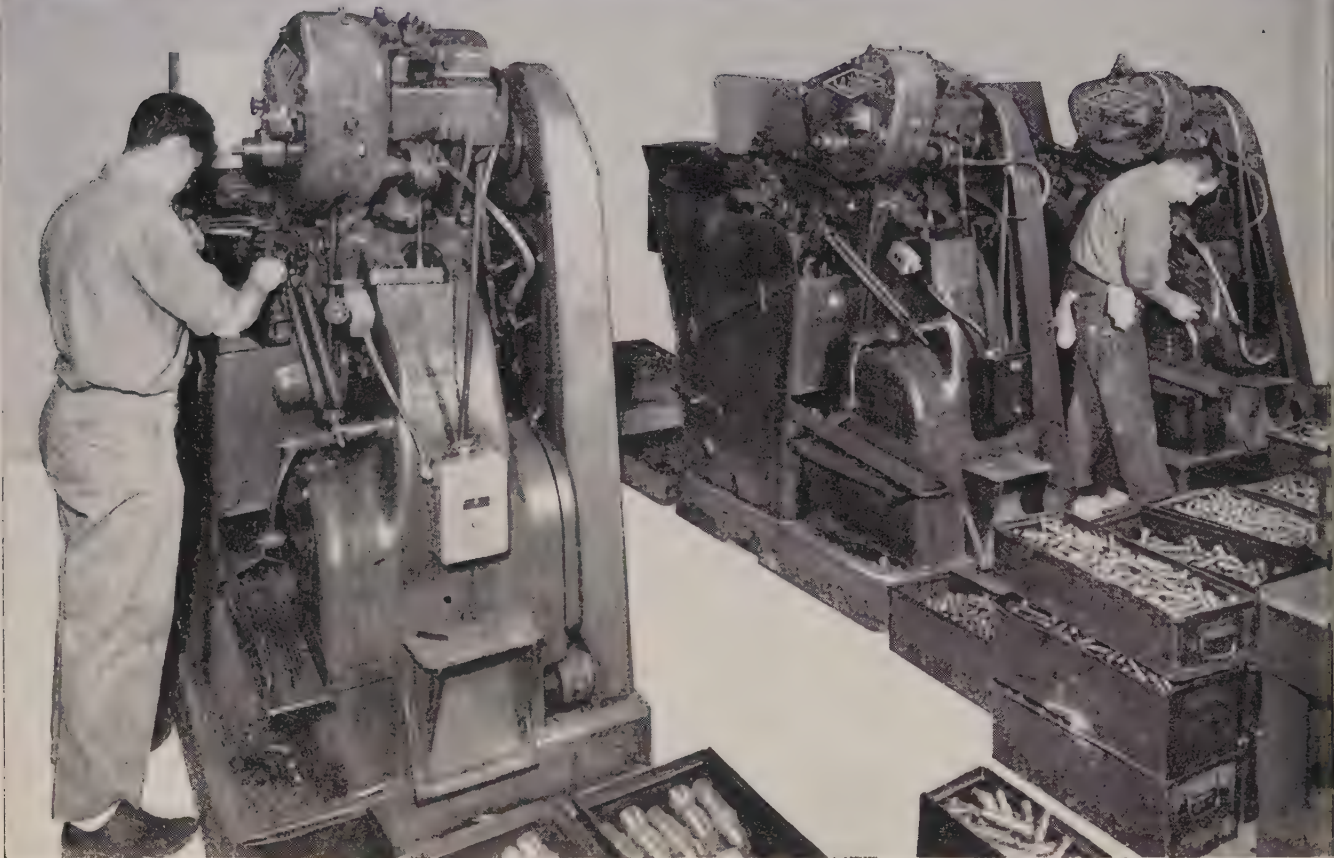
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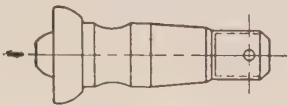
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LANDIS *"Automatic"* PROVED BY PRODUCTION . . .



Points and Threads 1020 Ball Studs per hour

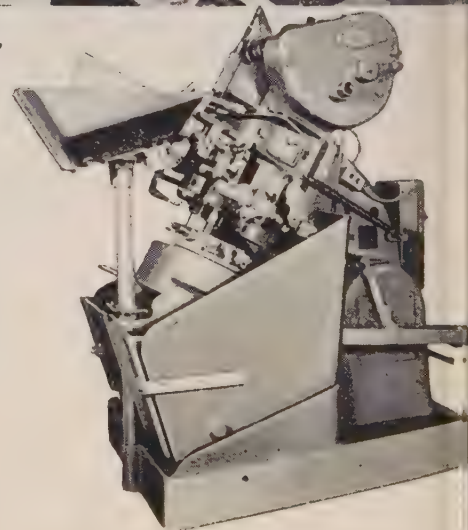
Through the use of LANDIS Automatic Forming and Threading Machines, a large manufacturer has solved his problem of mass-producing certain automotive parts.



The workpieces are cold-forged blanks, from which ball studs are made. Specifications require a 45° point and a 9/16" 18-pitch N.F. thread cut to a length of 5/8". In constant daily operation is a battery of LANDIS Automatic Forming and Threading Machines, each of which point and thread 1020 pieces per hour. Four hours of production are obtained between each chaser grinding, resulting in low tool cost and minimum machine down time.

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Can you revolutionize your pointing and threading operations with LANDIS Automatic Forming and Threading Machines? Please give specifications when writing for complete information.



THE **LANDIS** *Machine* CO.



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PENNSYLVANIA

eliminate the guesswork in selecting tool steels

Thousands of metal working people are using the Crucible Tool Steel Selector to determine exactly which type of steel they need. This handy selector covers 22 tool steels which fit 98% of all tool steel applications.

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To get your Selector merely fill in the coupon and mail. There is no obligation whatsoever.



1/3 actual size, Selector is in 3 colors

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Sub-Group — Special Purpose

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Tool Steel — Airdi 150

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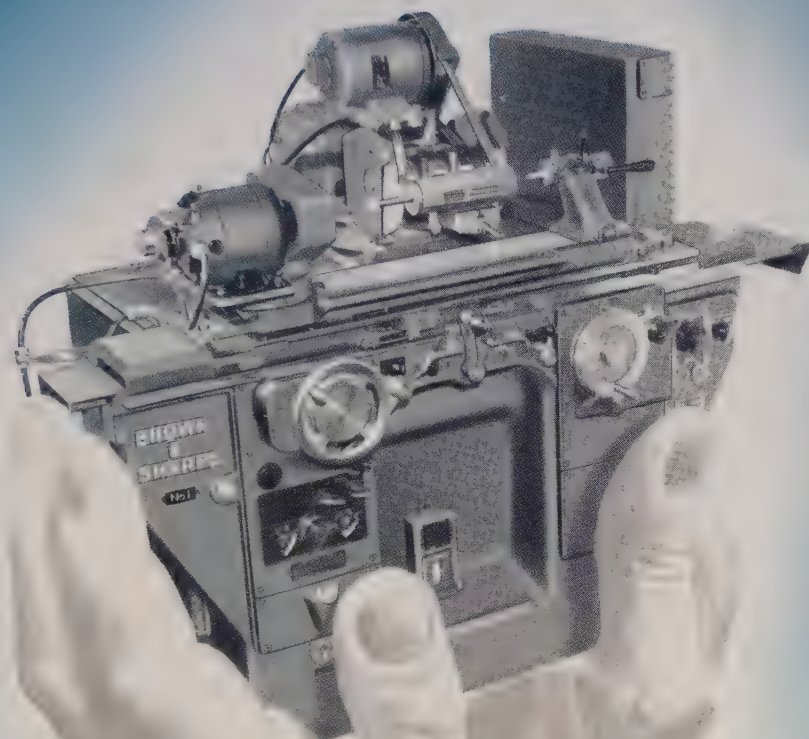
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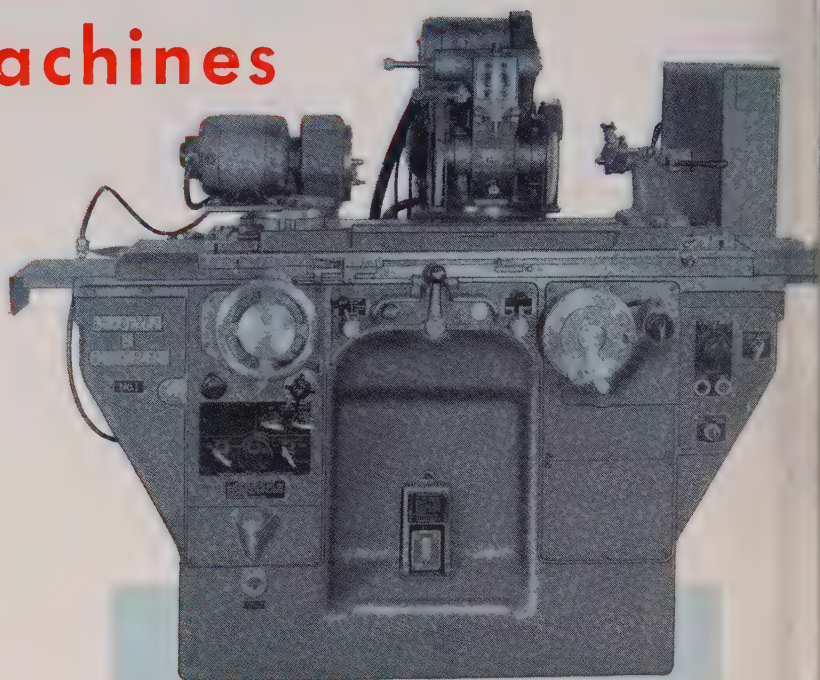


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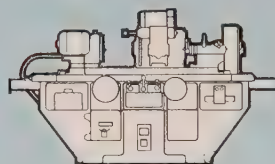
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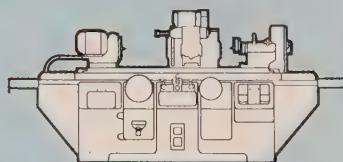
1

No. 1 — Grinding Capacity:
swing, 10"; centers take nom. 20",
max. 22¾"



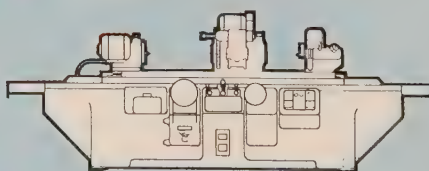
2

No. 2 — Grinding Capacity:
swing, 14"; centers take nom. 30",
max. 33¾"



3

No. 3 — Grinding Capacity:
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max. 43¾"



4

No. 4 — Grinding Capacity:
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Open-Hearth Grade	50 to 55%	8%	3%
Foundry Grade	50 to 55%	approx. 10%	3%

Vanadium Oxide (3 Grades)	Composition		
	Vanadium Oxide (V_2O_5)	Sodium Oxide (Na_2O)	Calcium Oxide (CaO)
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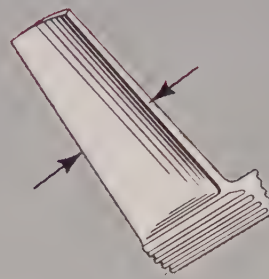
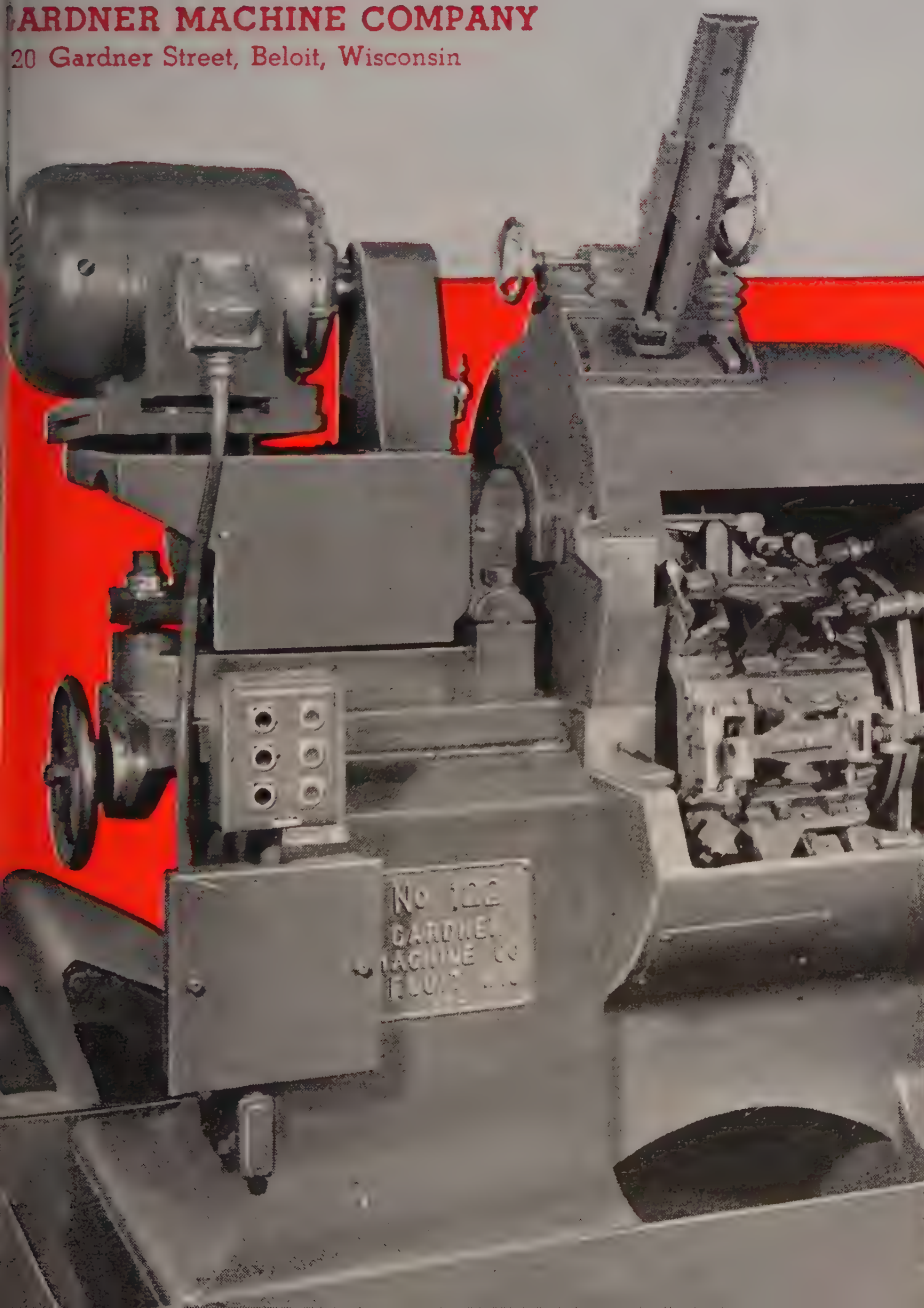
Gardner method solves production problems

Gardner No. 122-23" semi-automatic disc grinder solves this production by use of a rotary work carrier. Alternate fixtures permit grinding the two non-parallel edges. Each piece passes through the machine twice. Stock removal is $\frac{1}{16}$ " per surface.

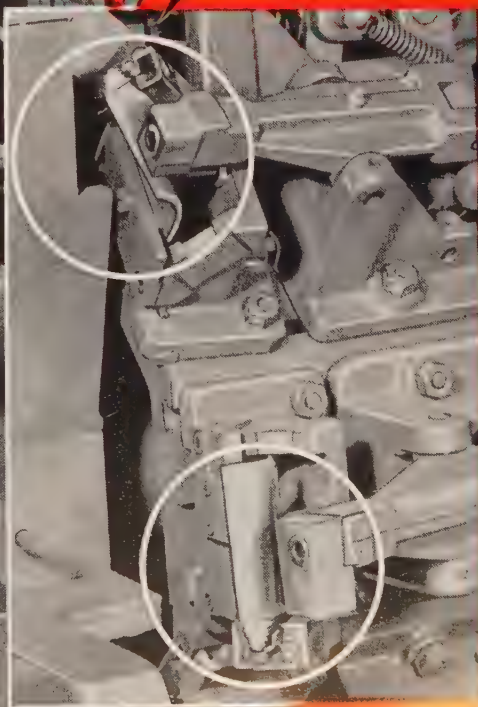
For help on your flat surfacing problems consult Gardner.

GARDNER MACHINE COMPANY

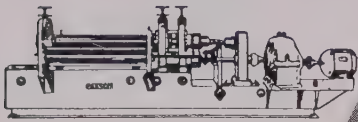
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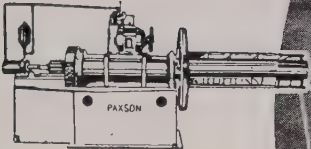
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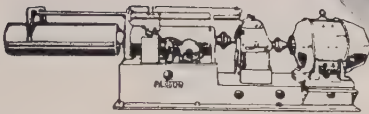
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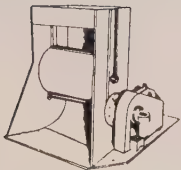
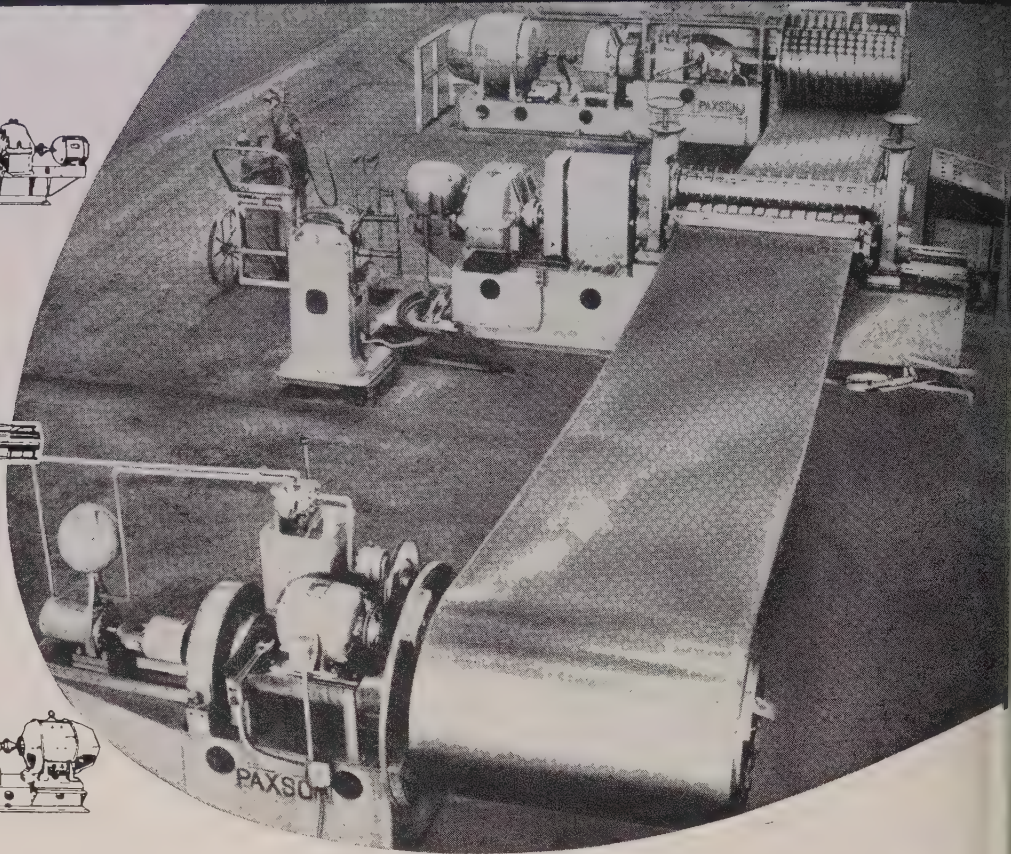
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ELECTROLYTIC ZINC-COATED STRIP

Cuts manufacturing costs!

- Speeds production
- Increases die life
- Reduces die maintenance

From the first day you use Weirzin you will find a marked reduction in manufacturing costs. Your production rate will increase with less time spent on die maintenance and replacement. The tight zinc-coating, electrolytically applied to Weirzin steel, actually lubricates dies without leaving a zinc deposit—thereby reducing die maintenance expense and lengthening die life.

One fabricator reported a 300 per cent increase in production per set of dies after changing to Weirzin from ordinary carbon steel. This is an economy factor too great to be ignored.

Add to this the fact that the zinc coating on Weirzin will not flake, peel or powder under the most severe fabricating operations and you will quickly realize what production economies Weirzin has to offer. Write today for further information on how Weirzin can cut your manufacturing costs—and make your product a better one.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL



CORPORATION



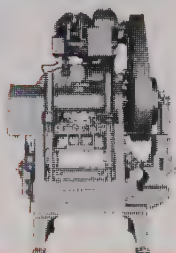
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TWO POST SINGLE ACTION
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FOUR POST PRESSES



SINGLE ACTION OPEN BACK PRESSES



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BACK PRESS



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Over the years, WF press equipment has established a reputation for long-lived production ability. Waterbury Farrel's sound design and rugged construction pays off in low maintenance, higher-profit operation.

Catalogs containing detailed information on any of the units shown or mentioned on this page are available on request. Write, wire or phone.

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WATERBURY 20, CONN.
Offices: Chicago, Cleveland, Millburn, N. J.

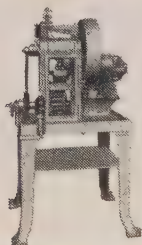
PILLAR PRESSES



TWO POST HORIZONTAL
PRESSES



HIGH SPEED BLANKER PRESSES



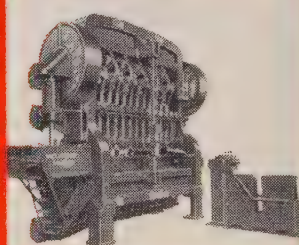
DOUBLE ACTION CAM PRESSES



NUCKLE JOINT PRESSES



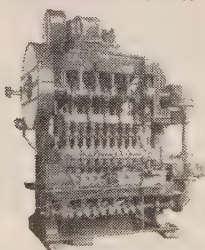
MULTIPLE PLUNGER PRESSES



SHEAR PRESSES



CRANK EYELET MACHINES



COLLAPSIBLE TUBE PRESSES



WF Presses include virtually every commercial type up to 600 ton capacity. Also wide range of accessories, feeds, attachments, slitters, scrap balers, straighteners, coilers, winders, etc.



WATERBURY FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.

Offices: Chicago, Cleveland and Millburn, N. J.

POWER PRESSES — Crank, Cam and Toggle; also Rack and Pinion Presses • **Eyelet Machines** • **Multiple Plunger Presses** • **Horizontal and Hydraulic Presses, etc.** **MILL MACHINERY** — Rolling Mills: Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc. **WIRE MILL EQUIPMENT** — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Painters • Swagers • Bull Blocks • String-up Machines • Spoolers, etc. **COLD PROCESS BOLT & NUT MACHINERY** — Headers (all types) • Rivet Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Farmers and Tappers, etc.

WF-12



How Napoleon's problem solved yours

WHEN Napoleon offered a prize for the best way to feed his fighting armies—the first airtight container was born.

Today, a century and half later, this container has evolved into the familiar “tin can”—the end product of multi-billion-dollar industries, employing hundreds of thousands of people.

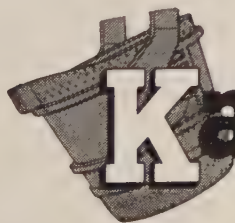
For all of us, the tin can has cut our work and improved our health by providing us with a balanced, nutritious diet throughout the year.

It permits us to enjoy the delicacies of many lands. It feeds our armed forces throughout the world.

In countless ways, the versatile can is an essential part of convenient, modern living—thanks to the continuing research and ingenuity of can manufacturers and the canning industry.

Kaiser Steel is proud to serve this great industry . . . through the production of tin plate at its new mill in Fontana.

It's good business to do business with



Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

give the **GO**-signal to

DETREX

for guaranteed
metal cleaning
performance



for free survey

At no obligation to you, the Detrex field service man in your area will come in and survey your present operations or discuss proposed ones. There is no cost for the service. The result will prove to you the money-saving advantage of Detrex service. Just fill out and mail the coupon below . . . our field man will contact you for the most convenient time to come in.

DETREX CORPORATION
DEPT. 201, Box 501
DETROIT 32, MICHIGAN

Please have the Detrex man in our area make an appointment to survey our operations to point up ways of cutting cleaning costs.

NAME
COMPANY
ADDRESS
CITY ZONE STATE

When you give the go-signal to Detrex, an experienced, well-coordinated team goes into high gear. A field service man talks with your engineers and production men to determine production, the operation following cleaning, and all the other factors that must be considered. Chemists and technicians in Detrex laboratories analyze the type of soil and determine the chemical process to remove it most effectively. Detrex engineers coordinate efforts with the laboratories to determine the type of equipment best suited to meet your production conditions. The result is a completely integrated process. A process providing all-round economy and efficiency that is only possible through such coordinated planning. A process that is completely guaranteed by one responsible company . . . Detrex.

There is another important benefit, too. The Detrex team is not confined to one type of cleaning process in its recommendation. That's because Detrex—and only Detrex—produces both the equipment and chemicals for all . . . solvent degreasing, alkali and emulsion washing, and phosphate coating processes for rust prevention and better paint adhesion.

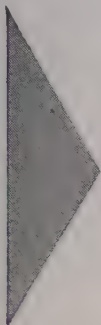
This combination of coordinated planning and flexibility of cleaning method is unique with Detrex. It consistently pays off in maximum cleaning efficiency at lowest operating costs. We guarantee it!



DETREX

CORPORATION

DEGREASERS • DEGREASING SOLVENTS • WASHERS
ALKALI & EMULSION CLEANERS • DRYCLEANING
EQUIPMENT • PHOSPHATE COATING PROCESSES



... industry's most comprehensive metal cleaning service



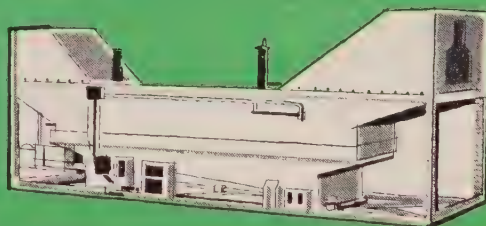
chemicals



Only Detrex produces alkalis, emulsions, phosphate coatings and degreasing solvent. Perm-A-Clar, the premium-grade Detrex solvent, is produced in our plants at Ashtabula, Ohio and Tacoma, Washington. Other chemicals are produced in our Detroit Hillview plant. In both cases modern facilities are used for finest product quality and latest techniques safeguard consistent chemical analysis. Regardless of the type equipment you are now using it will pay you to investigate the advantage of using Detrex chemicals.

equipment

The engineering and manufacture of every type equipment from small dip tanks to block-long conveyORIZED processing machines is a thoroughly familiar procedure in the Detrex manufacturing plant. Whether your operations call for a degreaser, a metal parts washer, or a processing machine, Detrex provides advanced engineering design and top construction quality.

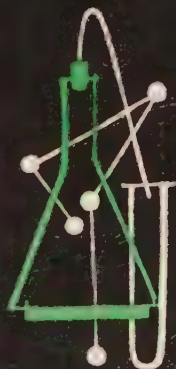


field service



Detrex service does not stop with completion of an installation . . . a nationwide corps of field service specialists keep Detrex installations at peak efficiency at all times. Trained to know metal cleaning thoroughly, they are qualified to make sound recommendations on how to conserve chemicals, operate your equipment more economically and handle work to better advantage. Another regular service is the training of your operators. These men visit customers' plants at regular intervals as a part of Detrex service . . . there is no charge for their time or their skills.

research



The Detrex research center contains extensive laboratory facilities manned by people eminently qualified through training and experience. Their work falls into two general classifications. The first is to develop new chemicals and processes to keep pace with the ever changing needs of industry. The second is the constant search for ways to make present Detrex products work more effectively for our customers. These facilities and skills are always at your disposal as another part of Detrex-One-Stop Service.



Like Diamond Cutting—

STEELMAKING, TOO, REQUIRES EXPERT WORKMANSHIP


Whatever your requirements for formability, uniformity, or drawing qualities, you'll find J&L Sheet & Strip . . . accurately and faithfully produced to meet your specifications. Complete understanding of the end-use of the sheet or strip you order is a rigid requirement of J&L production. You can depend upon J&L products to fit your production line.



J&L SHEET AND STRIP STEEL



JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH



Type QT Lectromelt Furnace at
Carondelet Foundry Company,
St. Louis, Missouri

"Our *Lectromelt** Furnace gives us the Versatility needed in our jobbing foundry"

"Top-charging doesn't give our Lectromelt Furnace much time to loaf, boosting its productive time and holding down labor costs," reports Carondelet Foundry Company.

"Its versatility lets us shift easily from one type product to another . . . from high strength gray irons for pressure castings, to special steels for heat resistance, corrosion and abrasion resistance. In 10 minutes we make a spectrographic, prepouring

analysis, permitting us to adjust each heat to meet specifications.

"Our Lectromelt Furnace is new, but already it's proved its worth."

If your business involves melting, smelting, refining or reduction, it will pay you to investigate what Lectromelt Furnace Equipment will do for you. For Catalog No. 8, write: Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pa.

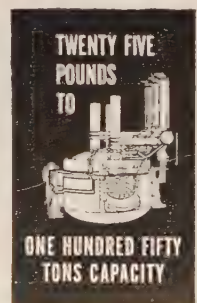
Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya

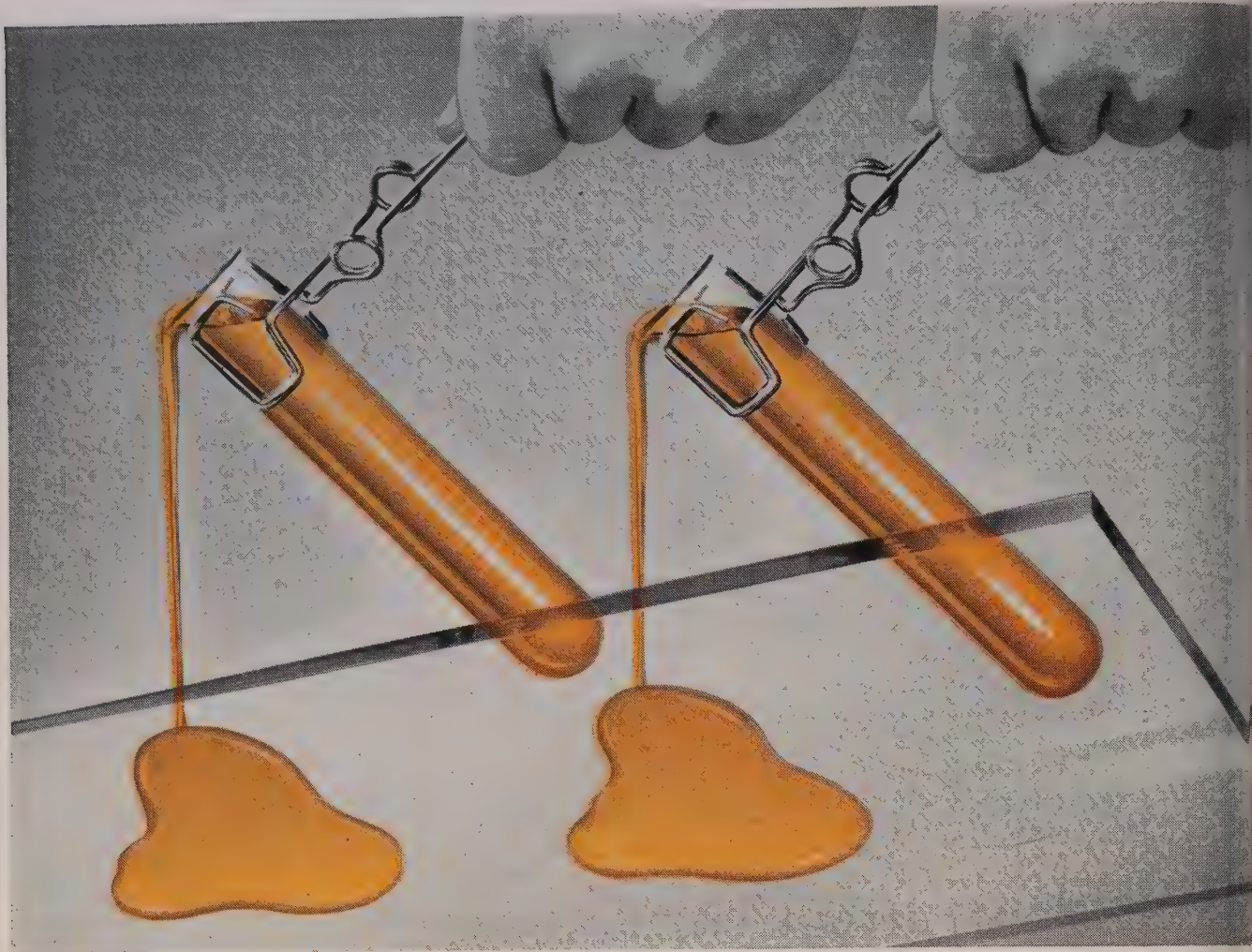
MOORE RAPID

WHEN YOU MELT...

Lectromelt

*REG. T. M. U. S. PAT. OFF.





Which lubricant has increased tin plate production 15%?

Both lubricants look, feel and act alike — yet tin plate mills using the one on the right—Palmoshield—have increased production as much as 15%.

A leading steel company adopted Palmoshield for cold rolling operations and recently over a run of 20 consecutive shifts, production was stepped up 15% over the average output with imported oil. This increase was made with no additional investment, no increase in labor force, no extra machines and no changes in mill operation. Yet 115 tons of steel were rolled for every 100 before.

Nearly two-thirds of the major tin plate mills in this country and Canada are now using Palmoshield for regular mill operations or on-the-job-test runs.

Advantages of Palmoshield

Palmoshield is produced in the heart of the steel industry. Users are not dependent on overseas ship-

ment from foreign controlled sources.

Palmoshield is made from domestic materials freely available in sufficient quantities to supply all American steel production.

Palmoshield need not be stockpiled by the user, yet it does not deteriorate in storage.

Palmoshield is tailor-made to your needs. Free fatty acid content can be controlled to within 1/2%.

Technical assistance for your own operations.

On request an Ironsides representative will give you facts on Palmoshield to help you set up a test program in your mill.

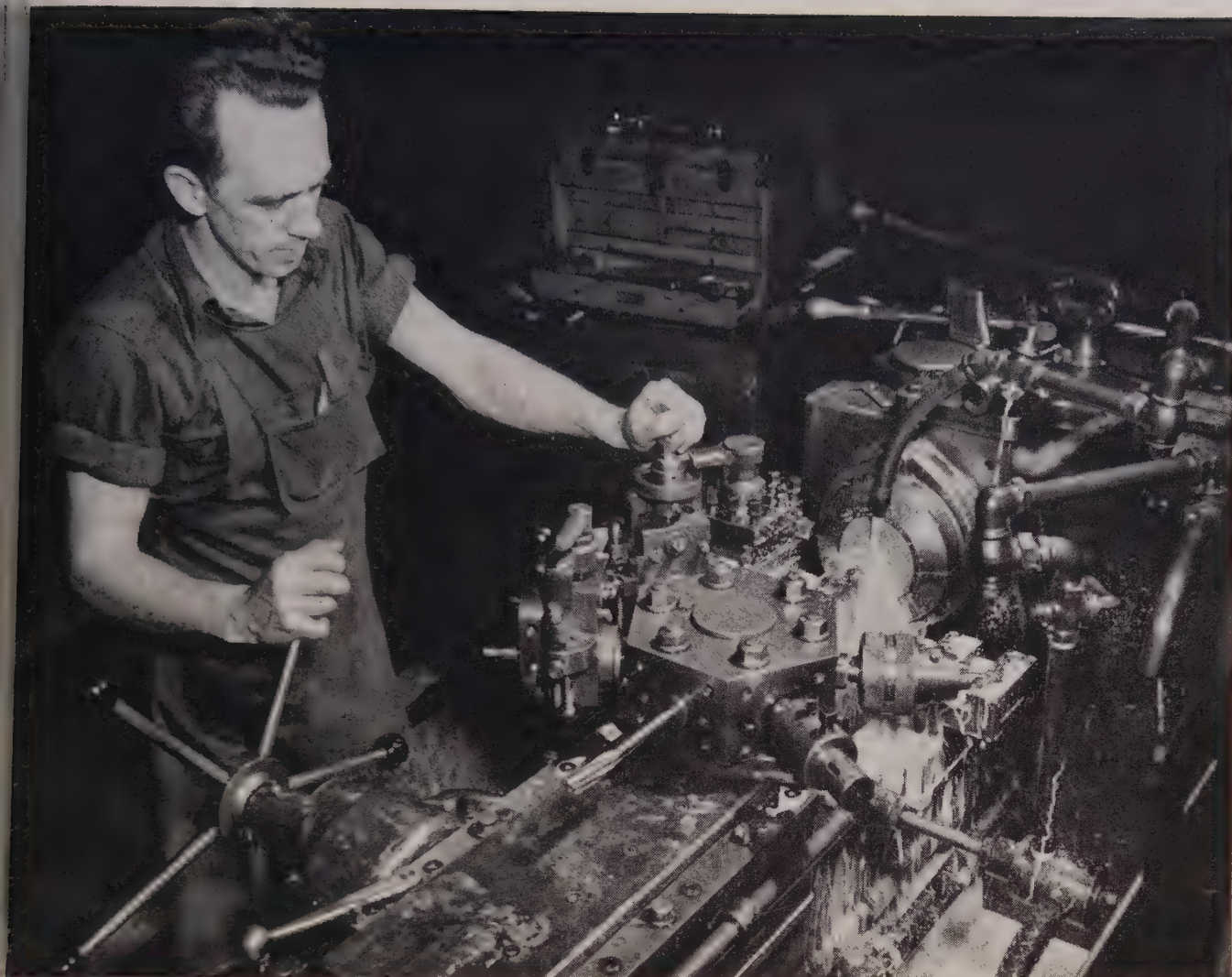
Palmoshield is available for same-day shipment in 55-gallon drums and tank car lots. For full information write The Ironsides Company, 270 West Mound Street, Columbus, Ohio.

SPECIAL LUBRICANTS and PRESERVATIVES

IRONSIDES

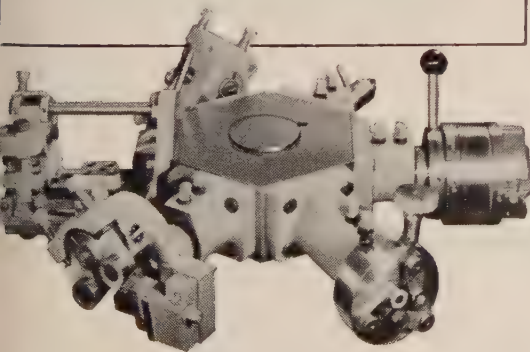
SHIELD
PRODUCTS

PALMOSHIELD



PICTURE OF A MAN PRODUCING 25% MORE *Same job, same operation, but Better Tools!*

● This shop has found it can do more jobs faster on Warner & Swasey Turret Lathes with the Standard Tooling Setups that fit their requirements. Multiple and combined cuts, with shorter setup time, mean profitable production increases.



ELECTROL INCORPORATED, of Kingston, New York, transferred this precision Stop-Plunger job to a Warner & Swasey No. 3 Universal Turret Lathe because it had the speed and accuracy required, as well as the proper tooling for the job. The result was a 25% increase in production of this high pressure hydraulic control part.

Permanent Universal Tooling setups and the right tools which can help you increase your output are all in the new 204 page Warner & Swasey Tool Catalog. Write for your copy.



**WARNER
&
SWASEY**
Cleveland
**PRECISION
MACHINERY
SINCE 1880**

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

in the field of refractories . . .



HARBISON-WALKER

Leadership

These among other refractories pioneered by Harbison-Walker continue to make history in the metallurgical industries.

VACUUM POWER PRESSED BLAST FURNACE BRICK—This development by Harbison-Walker provides refractories with superior properties of uniformity, lower porosity and permeability, and increased strength. Various Harbison-Walker blast furnace brands are produced by this method.

H-W 18—A high-fired iron blast furnace refractory which was developed to meet a demand for maximum resistance

to abrasion and to disintegration by carbon monoxide. This unusual high duty fireclay refractory meets the rigid standards of quality and uniformity in dimensions and workmanship. Its excellent properties account for the splendid service it is giving in complete blast furnace linings.

METALKASE—The steel-encased chemically-bonded basic refractory first introduced by Harbison-Walker many years

ago has effected great economies in its extensive use in open-hearth and electric steel furnaces and in many other applications.

VEGA—The original super-duty silica refractory, VEGA provides a margin of refractoryness which permits higher operating temperatures, renders longer service and reduces maintenance costs. In addition to its wide use in the steel industry, VEGA finds many other economical applications.



HARBISON-WALKER



S BASED UPON *Solid Achievement*

Whatever your requirements for refractories may be, there are available Harbison-Walker products of highest quality for every application.

Over the years, a policy of continuous development and improvement has given Harbison-Walker a position of leadership based on achievement. For more than half a century, Harbison-Walker Blast Furnace Refractories have enjoyed a wide preference in the industry. Today, considerably more than half of all the blast furnaces

in the United States, Canada and Mexico are lined with Harbison-Walker refractories. During the recent expansion of iron-making facilities, the choice has been Harbison-Walker linings for 17 of the 20 new blast furnaces, 14 of which are complete linings.

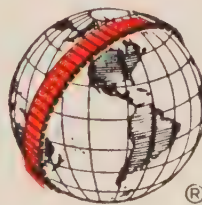
Harbison-Walker refractory products include all types and classes for blast furnace stoves, open-hearth and electric steel furnaces, by-product coke ovens, soaking pits and all the various metallurgical furnaces.

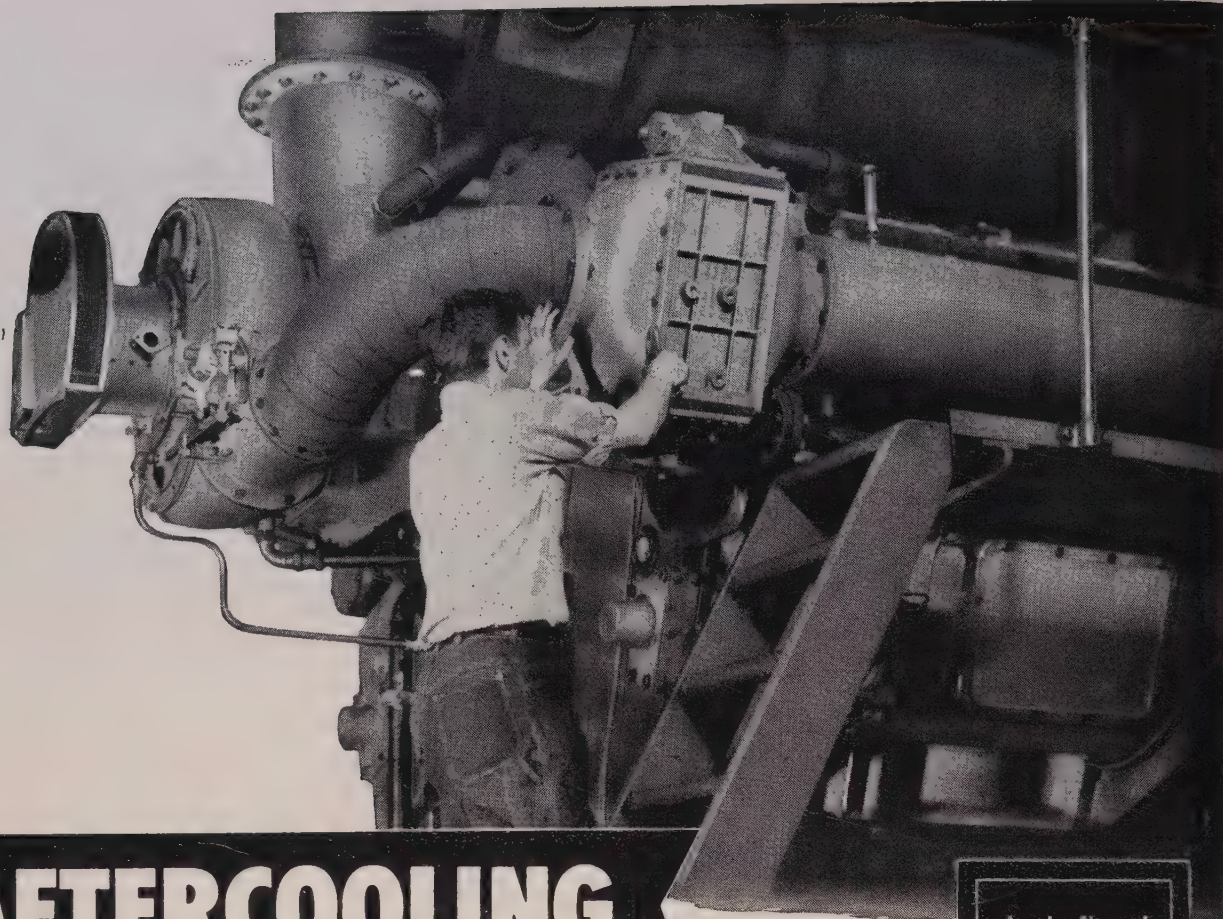
REFRACTORIES COMPANY

AND SUBSIDIARIES

World's Largest Producer of Refractories

General Offices: Pittsburgh 22, Pa





AFTERCOOLING

a dividend in extra power for users of Cooper-Bessemer supercharged diesels

*Another Example
of
Efficient Power
at Lower Cost*



• Yes, if you are operating a supercharged Cooper-Bessemer diesel, you're in line for Cooper-Bessemer aftercooling — a sure-fire way to increase your horsepower approximately 15%.

It involves only a simple, surprisingly inexpensive modification. No change in engine speed, space requirements, jacket water cooling system or overload capacity. The aftercooler is readily inserted between the

supercharger and intake manifold. Here the combustion air is watercooled, resulting in greater power and higher combustion efficiency.

If you can use additional power to advantage, here's a simple, inexpensive way to get it — another typical example of progressive engineering at Cooper-Bessemer. Why not talk it over with our nearest office?

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Dallas, Greggton, Pampa and Odessa, Texas Seattle Tulsa Shreveport
St. Louis Los Angeles Chicago Caracas, Venezuela Cooper-Bessemer of
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Cooper-Bessemer
Corporation

MOUNT VERNON, OHIO — GROVE CITY, PENNA.



Beyond compare!

EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing...that this spring steel is absolutely in a class by itself for dimensional and mechanical uniformity...for speeding production and cutting down rejects.

You always *pay* for the best when you buy flat spring steel...make sure you *get* it by specifying Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.



Empire State Building,
world's tallest building.



ROEBLING 

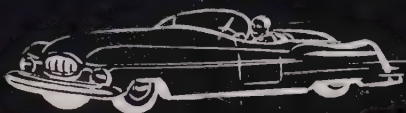
A subsidiary of The Colorado Fuel and Iron Corporation

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

How times have changed!



for instance:



This was transportation NOW this is it.



This was the best cleaner until we got THIS.



The old rub-a-dub washdays gave way to THIS.

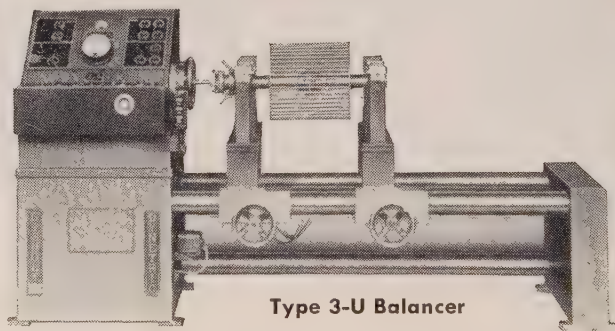


This was a balancer until we built THIS!

Any job worth doing is worth doing *right*! And with today's precision manufacture and high-speed rotating parts, that applies to balancing more emphatically than ever.

If your work involves balancing, do it the *modern* way—with Gisholt DYNETRIC Balancing Machines. Here's unrivaled speed that enables you to locate and measure unbalance in a matter of seconds—unequalled accuracy, capable of detecting vibrations as small as .000025".

Gisholt Balancers are available for handling all kinds of rotating parts, from a fraction of an ounce to many tons. Write us for a copy of the booklet *STATIC & DYNAMIC BALANCING*.



Type 3-U Balancer



DEVELOPED JOINTLY WITH
WESTINGHOUSE ELECTRIC CORPORATION
DYNETRIC IS A TRADE MARK
REG. U. S. PAT. OFFICE BY
WESTINGHOUSE ELECTRIC CORPORATION

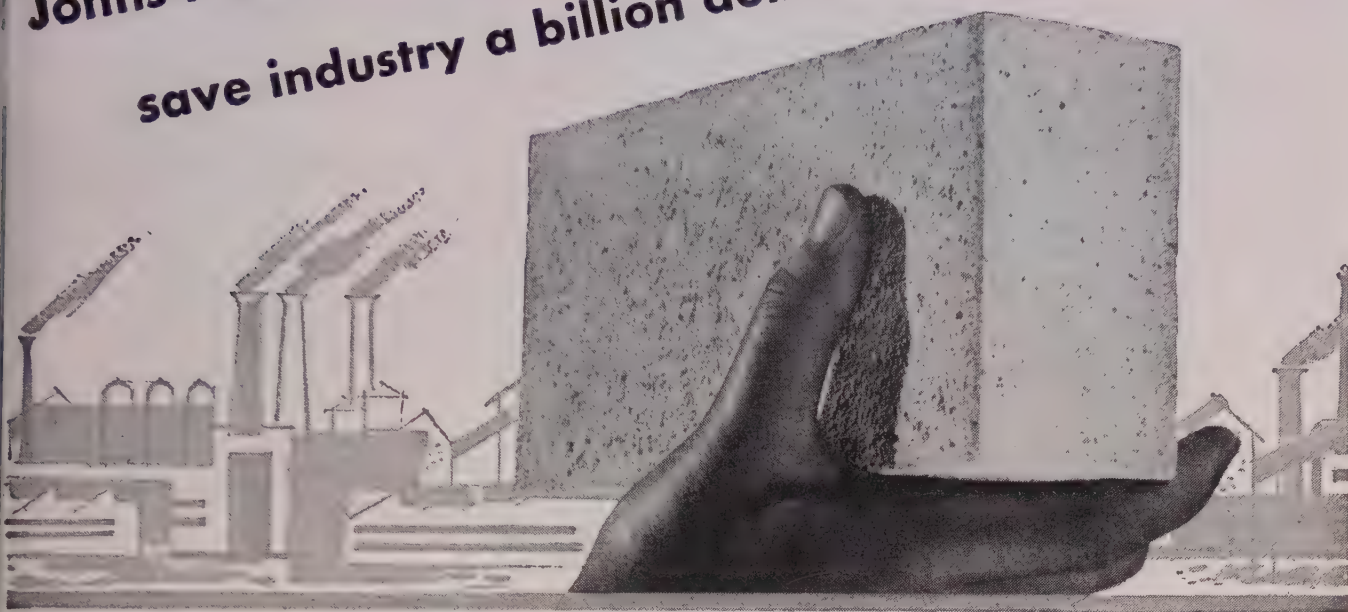
GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

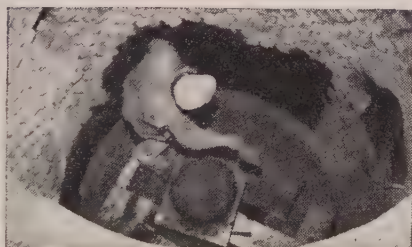
Johns-Manville Insulations
save industry a billion dollars in fuel every year!



Reduce your fuel costs and build better furnace linings
with JM-3000 INSULATING FIRE BRICK

HERE'S THE ONLY insulating fire brick that withstands a full 3000F. It's highly efficient both as an exposed refractory lining or as back-up insulation. And JM-3000 is only one of six types of Johns-Manville Insulating Fire Brick made for these applications. All provide long-life insulation. All are light in weight, have low conductivity, high structural strength. These properties permit thinner furnace walls—yet you can achieve important fuel savings and increased production, because J-M Insulating Fire Brick assures quick furnace response.

Sil-O-Cel* Insulating Brick is another outstanding J-M fuel-saver . . . a high load-bearing brick for back-up insulation behind refractory linings. It comes in three types, for service through 2500F—makes it possible to reduce the necessary thickness of refractory linings as much as one-third.



Save fuel with

J-M Hydraulic Setting Refractories

Johns-Manville refractories meet every need for castable, troweling and gunning applications for temperatures through 3000F. *Firecrete** is used to cast special shapes of all kinds. It is ready for use within 24 hours, has negligible shrinkage and high resistance to spalling. *Blaze-crete** is used to build and repair furnace linings. When gunned, it adheres readily with a minimum of rebound loss. When slap-troweled, it eliminates laborious ramming and tamping.

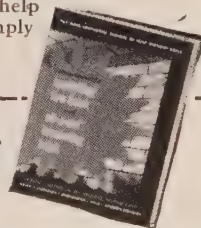


Save Fuel with J-M Aggregates and Fills

These lightweight insulations are used as fills to conserve heat in irregular spaces where other forms of insulations cannot be economically applied. They are also used as aggregates for mixing with other materials to form insulating refractory concrete.

*Reg. U. S. Pat. Off.

Send for your free copy! This new booklet IN-115A gives full details about J-M insulating materials for service through 3000F. To find out how they can help cut your fuel costs, simply mail coupon.



Johns-Manville, Box 60, N.Y. 16, N.Y.
 (In Canada, 199 Bay St., Toronto 1, Ont.)
 Please send me, without charge,
 copy of brochure IN-115A

Name _____

Company _____

Street _____

City & Zone _____ State _____

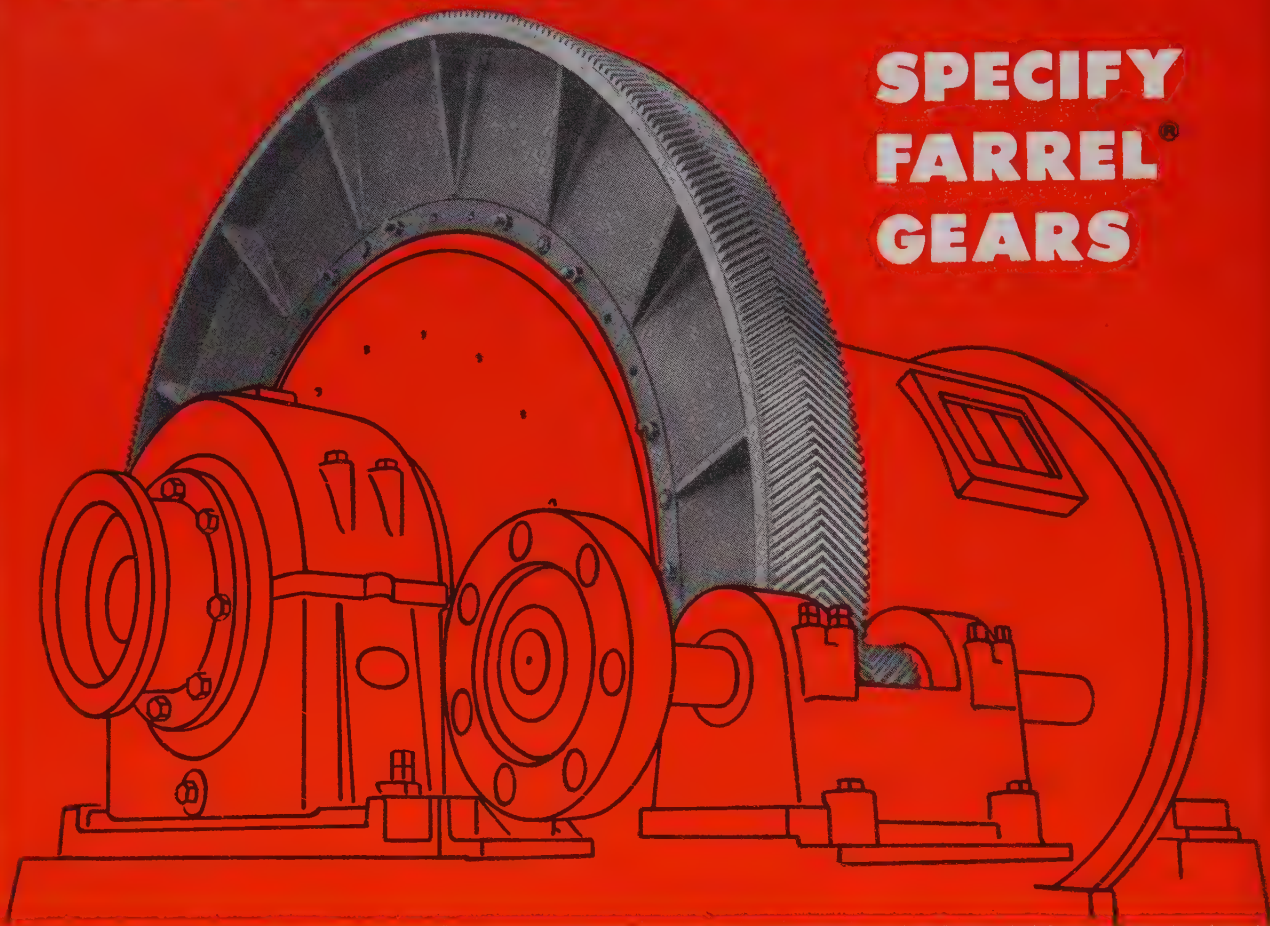
ST-3



Johns-Manville
FIRST IN INSULATION

Where the going is TOUGH . . .

SPECIFY FARREL® GEARS



Precision generation combined with the use of highest grade materials gives Farrel herringbone gears the ability to withstand the heaviest shock loads encountered in machine applications.

Accuracy of tooth contour and tooth spacing, overlap or interlacing of the teeth, gradual engagement and inclined line of pressure contribute to smooth operation and maintenance of correct tooth action throughout a long gear life. The opposed helices balance and absorb axial thrust within the gear member, preventing harmful thrust loads with

resultant stresses on other parts of the machinery.

Farrel engineers are available to assist in working out unusual gear problems. Information about herringbone gears, or any of the other types mentioned on this page, will be sent on request.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

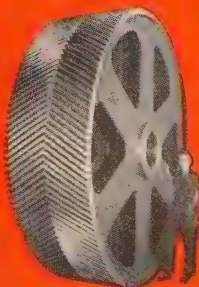
Plants: Ansonia and Derby, Conn., Buffalo, N. Y.

Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Detroit, Chicago, Minneapolis, Portland (Oregon), Los Angeles, Salt Lake City, Tulsa, Houston, New Orleans

Farrel-Birmingham®

HERRINGBONE GEARS

Farrel-Sykes herringbone gears are available in any size from 1/2 inch to 20 feet diameter, 1/4 to 60 inch face, 24 DP to 0.75 DP.



STRAIGHT TOOTH AND SINGLE HELICAL GEARS

Farrel also supplies straight tooth (spur) gears and single helical gears in any size from 1/2 inch to 20 feet diameter, 1/4 to 30 inch face, 24 DP to 0.5 DP.



INTERNAL GEARS

Large internal gears are available with either spur or helical teeth, in sizes up to 18 feet diameter, 12 inch face, 1 1/2 DP.



FB-73

Set screw for
coal-cutter chain



TOUGHNESS!

Fan shaft and
oil impeller for
automobile
water pump



HARDNESS!

Socket for mechanic's
socket wrench



STRENGTH!

Each Achieved With the Right REPUBLIC COLD DRAWN ALLOY STEEL BARS

Here are examples of alloy steel parts made by Republic customers. Each was searching for a certain outstanding characteristic . . .

One wanted the edges of a set-screw for a coal-cutter chain to be tough enough to resist rounding off when dragging through a coal seam deep in a mine . . .

The next one wanted an automobile water-pump shaft hard enough to resist thousands of miles of high-speed service without becoming worn and leaky . . .

The third wanted a socket-wrench with a socket that was stronger than the heaviest-handed mechanic . . .

All three manufacturers called in the Republic

Field Metallurgist . . . discussed their three different problems with him . . . got a triple-distilled alloy-choice that was part his, part the Republic Mill Metallurgist's, part the Republic Laboratory Metallurgist's.

Each customer is using a different Republic Cold Drawn Alloy Steel Bar grade . . . all three got the high surface quality, the close dimensional tolerance, the high strength, and the UNIFORM MACHINABILITY that helped cut production costs, increase tool life, improve product quality.

Want to try Republic 3-Dimension Metallurgical Service on *your* production problems? A call to your Republic District Sales Office will start action.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.



3-DIMENSION
Metallurgical Service

...combines the extensive experience and co-ordinated abilities of Republic's *Field, Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage. IT CAN DO THE SAME FOR YOU.

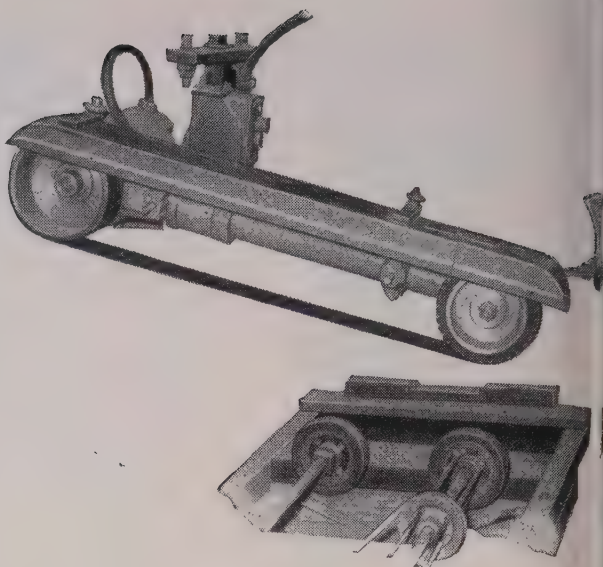
Republic COLD DRAWN
ALLOY STEEL BARS



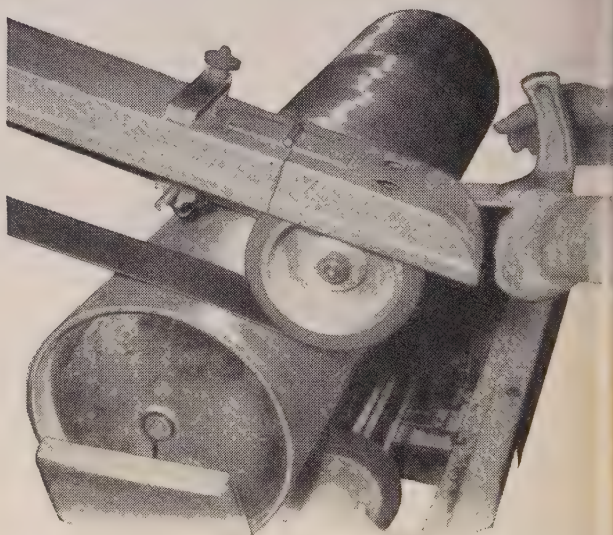
How would you SOLVE IT?



1 PRODUCTION PROBLEM: To cut unit costs of rough finishing zinc-coated water softener tanks. Zero Water Softener Mfg. Co. was using 5" diameter disc grinder on a flexible shaft which finished only 6 tanks an hour, left unsatisfactory finishes, tired operators.



2 SOLUTION: a 3M Representative suggested that this Chicago manufacturer switch to a swing grinder using fast-cutting 3M Belts (#36 Three-M-ite Cloth, size $2\frac{1}{2} \times 72$ ") run over a 6" wheel. Grinding was done behind the wheel on the unsupported belt.



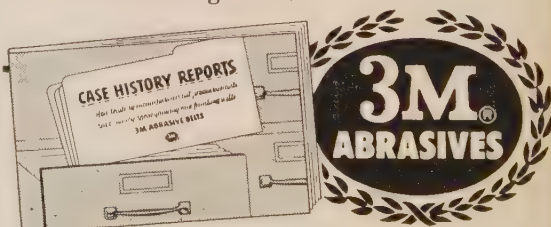
3 RESULTS: An immediate production increase from 6 to 20 tanks per hour with higher quality finish. Each belt finishes 10 to 60 tanks, with far less operator fatigue. A 3M Representative can help you solve your grinding problems, too. His services are available without cost or obligation.

WANT MORE INFORMATION?

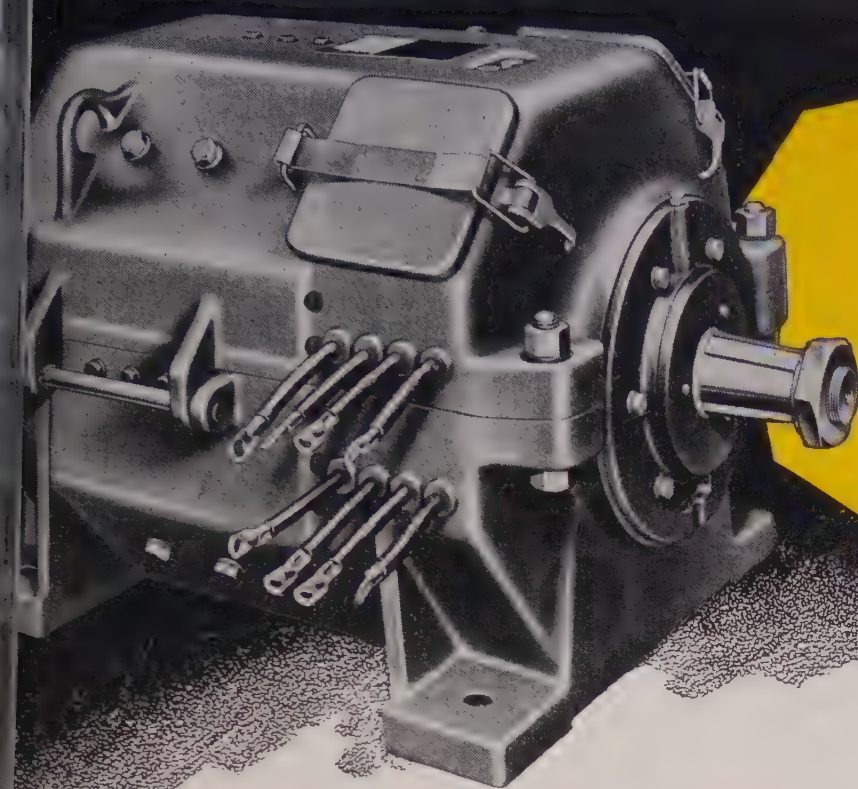
Minnesota Mining & Mfg. Co.
Dept. S-63, St. Paul 6, Minn.

- ☐ Send me free booklet: "Case History Reports on 3M Abrasive Belts."
☐ Have 3M Representative call.

Name.....
Company.....
Address.....
City.....Zone...State.....

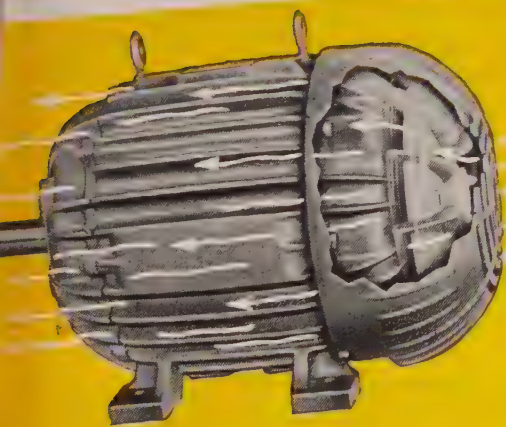


Made in U.S.A. by Minnesota Mining & Mfg. Co. General Office: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 121 42nd St., New York City. Makers of "Scotch"® Pressure-Sensitive Tapes, "Scotch"® Sound Recording Tape, "3M"® Adhesives, "Underseal"® Rubberized Coating, "Scotchlite"® Reflective Sheeting, "Safety-Walk"® Non-Slip Surfacing.



BEST BET
for heavy duty
mill and crane
service—

ELLIOTT Crocker-Wheeler 600 SERIES MILL MOTOR



Popular for 11 Years!

**ELLIOTT CROCKER-WHEELER
SEALEDPOWER MOTOR**

This totally enclosed fan-cooled induction motor keeps cool with a cowl-directed blast of air driven along its finned case. This air-stream carries off heat, and says "no parking" to dirt, dust, lint, etc. In 3 to 125 hp. Also available in vertical type, and in explosion-proof, underwriters approved, in most ratings. Ask for the Sealedpower Bulletin.

■ Concentrated toughness is built into this motor. Not only will it stand the gaff of constant, heavy service, but due to superior engineering, it packs as much as 1/3 more power in each standard size frame. Split frame allows quick access to bearings, armature, field coils. From 5 to 265 hp. Also available *separately forced-ventilated, protected self-ventilated, back-geared*. Write for the Mill Motor Bulletin.

ELLIOTT Company

**CROCKER-WHEELER DIVISION
AMPERE, N. J.**



For large motors: RIDGWAY DIV., RIDGWAY, PA.

Plants at: JEANNETTE, PA. • RIDGWAY, PA. • AMPERE, N. J.
SPRINGFIELD, O. • NEWARK, N. J.

BRANCH OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES
ELLIOTT APPROVED SERVICE SHOPS COVER THE COUNTRY



Right from the mine

YOUNGSTOWN

Cold Finished
**CARBON AND ALLOY
STEEL BARS**

Uniformly satisfactory
in service because—

**Machinability is
outstanding**

**Tolerances are
uniformly close**

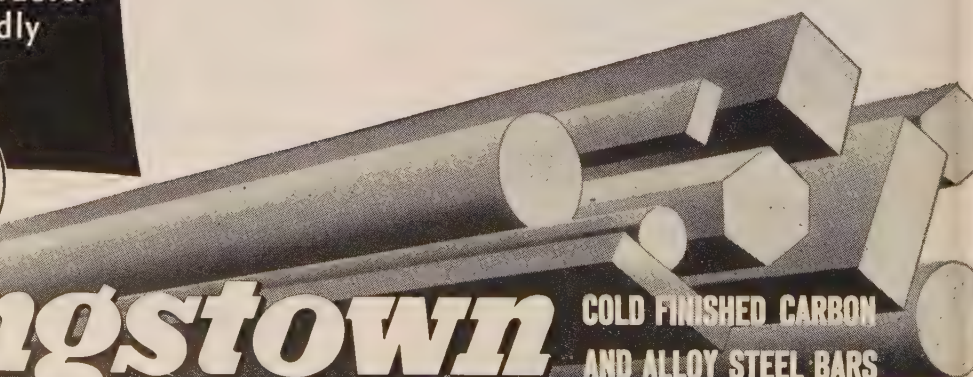
**Metallurgical character-
istics are rigidly
controlled**



RIGID QUALITY CONTROL

●One important reason why Youngstown Cold Finished Bars are so uniformly satisfactory is that their production is under the sole supervision of a single integrated organization—from mining the ore to shipping the finished product.

Youngstown Cold Finished Carbon and Alloy Steel Bars are furnished in standard shapes and sizes, either in coils or straight lengths. For further information, phone or write our nearest District Sales Office.



Youngstown

**COLD FINISHED CARBON
AND ALLOY STEEL BARS**

THE YOUNGSTOWN SHEET AND TUBE COMPANY

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.
PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS -
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*Manufacturers of
Carbon, Alloy and Yelow Steel*



window shopping costs nothing... *can save you plenty*

It pays to "shop around" before you make your power transmission or conveyor chain selections. Because, in order to get the most for your money, you need the right chain for your machines. For example, a precision-finished roller chain is ideal for high speed drives. But, roller chain is not the economical, efficient choice for slow speed, heavy-duty service. A heavy-duty steel or cast chain may be your answer here. That's why it will pay you to "shop" through the *complete* Chain Belt line before you make your choice. There's a size and type to fit any power transmission or conveyor need.

Don't be handicapped by relying on a supplier with a limited line to answer all your needs. It may cost you more...may handicap the expected performance of your machines.

Your Chain Belt Field Sales engineer will be happy to assist you in making the exact chain selection that best fits your requirements. He is not prejudiced by the limitations inherent in an incomplete chain line...can recommend the chain that will give you the service you want...at the lowest possible cost. For complete information or engineering assistance, mail the coupon.

REX

BALDWIN-REX®

Chain Belt COMPANY OF MILWAUKEE

CHAIN BELT COMPANY

53-503A

4660 W. Greenfield Ave., Milwaukee 1, Wis.

Gentlemen:

Please send me information on Rex and Baldwin-Rex chains

☐ For Power Transmission ☐ For Conveying ☐ For Tension Linkages
☐ Slide rule drive selector for slow to medium speeds

Name.....

Company.....Dept.....

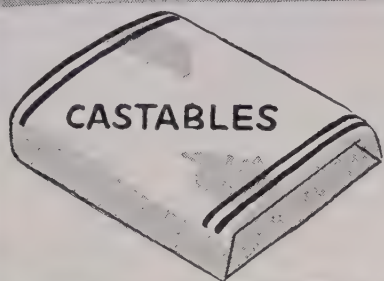
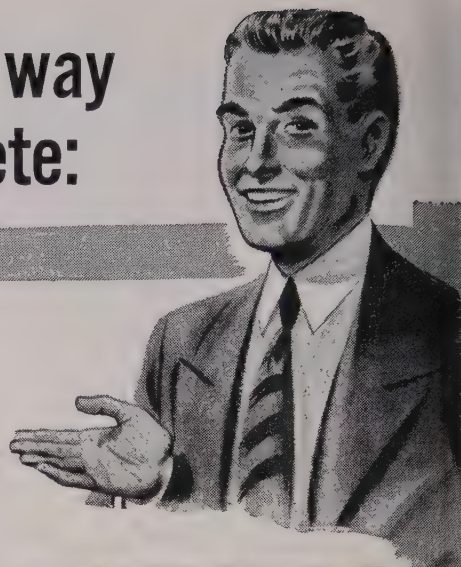
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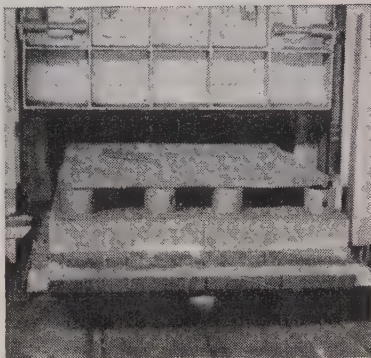
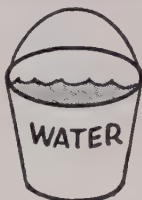
Atlanta • Baltimore • Birmingham • Boston • Buffalo • Chicago
Cincinnati • Cleveland • Dallas • Denver • Detroit • El Paso • Houston
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Distributors located in principal cities in the United States and throughout the world
EXPORT OFFICES: Milwaukee and 19 Rector Street, New York City.

Here's the most convenient way to make Refractory Concrete:



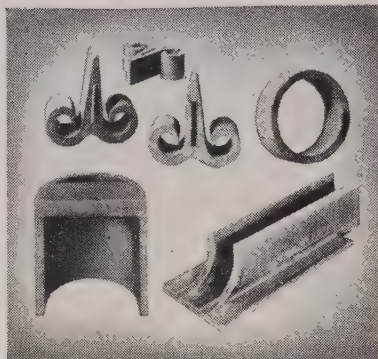
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★ CAR TOPS

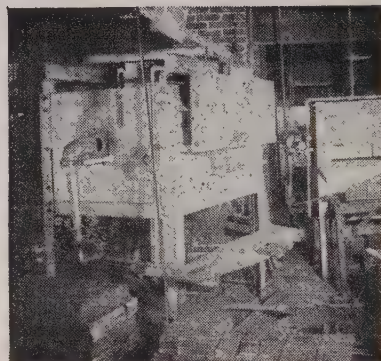
★ ARCHES

★ HEARTHS



★ SPECIAL SHAPES

★ CORE OVEN FLOORS



★ HEAT TREATING FURNACES

★ DOOR LININGS

IT'S THAT SIMPLE—Castable Refractories completely eliminate the need of finding suitable aggregates . . . and grading them to the right sizes. Packaged Castables come to you with Lumnite* calcium-aluminate cement and selected aggregates already mixed—needing only addition of water. The resulting Refractory Concrete reaches service strength in 24 hours or less.

This convenient way of making Refractory Concrete speeds work and cuts labor costs. It simplifies tough jobs—and some Castables are suitable for use at temperatures of 3000°F. or higher.

REFRACTORY CONCRETE made with Castables is the *adaptable* refractory. Easy to place in any size or shape.

No cutting or fitting necessary when you pour

furnace walls, door linings and special shapes. There's no volume change to bother about. Build heat resistant floors, furnace walls, arches and hearths—Refractory Concrete withstands severe thermal shock, resists spalling.

In fact, you'll find Castables tailor-made for speed and convenience on many Refractory Concrete jobs. Handy for repairs, too.

CASTABLES to meet specific temperature and insulation requirements are made by manufacturers of refractories and sold by their distributors. For further information, write to LUMNITE DIVISION, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"LUMNITE" is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.

S-L-54R

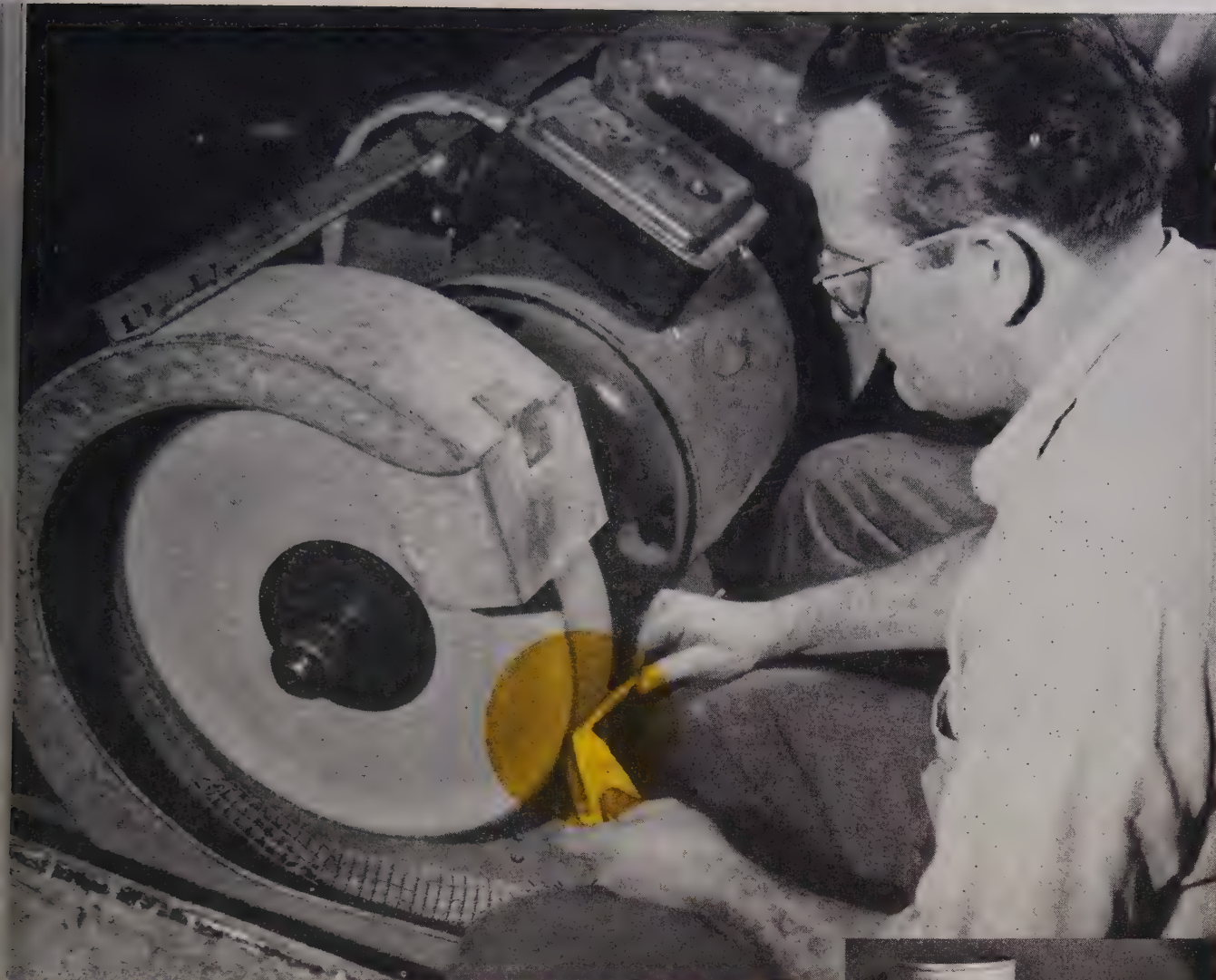
ATLAS®

LUMNITE for INDUSTRIAL CONCRETES

REFRACTORY, INSULATING, OVERNIGHT, CORROSION-RESISTANT



"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—September to June



GOLF CLUB HEADS GET THE "TOUCH OF GOLD" as they are precision polished to the desired weight and finish on a grease wheel coated with ALUNDUM[®] Abrasive.

For your product-improving

"TOUCH OF GOLD"

—polish with ALUNDUM Abrasive

For polishing that has the true "Touch of Gold" — that adds most to the usefulness and attractiveness of your products — there's nothing to equal Norton ALUNDUM Abrasive grain.

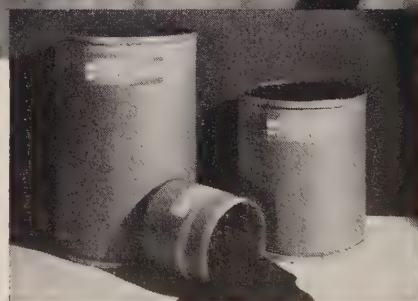
Made under Norton's strict quality control, ALUNDUM Abrasive is extremely hard and tough, always uniform in grain size and shape, with a maximum of fast polishing, sharp-cutting edges. No oversize grains to mar the finish; no undersize grains or slivers that won't do their share of the work. And its high

capillarity means the easy glue-absorption that increases polishing wheel life and efficiency.

These and other advantages assure better polishing — your value-adding, cost-cutting "Touch of Gold" — every time you use ALUNDUM Abrasive.

**Get quick delivery from
your Norton distributor**

of the exact types of ALUNDUM Abrasive you need. He's backed by complete



stocks in Chicago, Detroit, Cleveland, Philadelphia, Pittsburgh and Worcester, ready for shipment in container sizes to meet every requirement. And if necessary, he'll gladly call your Norton Abrasive Engineer for expert aid in your polishing problems. Or you can write to Norton Company, Worcester 6, Massachusetts. Distributors in all principal cities. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

NORTON
ABRASIVES

*Making better products to make
other products better*

*Trade-Mark Reg. U.S. Pat. Off. and Foreign Countries

NOW

YOU CAN DETERMINE CARBON AND SULFUR CONTENTS IN A SINGLE OPERATION:

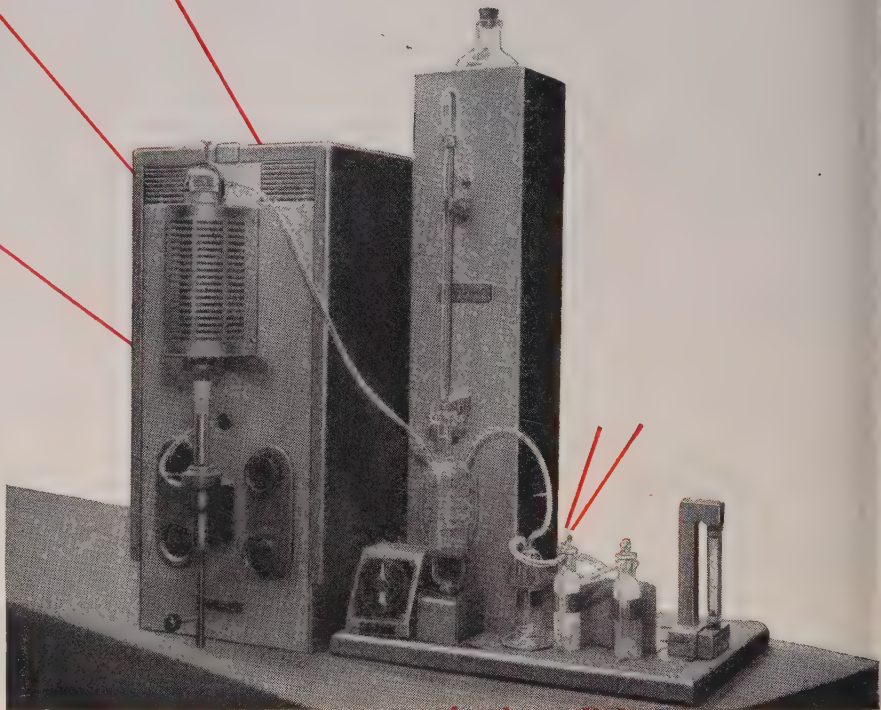
**.. running time cut from 35
to 10 minutes**

The days of running two separate tests to determine carbon and sulfur contents of iron and steel are over. The Research Laboratories of Lindberg Engineering Company, with the cooperation of A. C. Holler, Twin City Testing & Engineering Laboratory and W. K. Aites of Westinghouse Airbrake Company have developed a new process utilizing a Lindberg high frequency combustion unit to test for *both* carbon and sulfur in a single operation . . and in a total of only 10 minutes!

This represents a time saving of 22 to 25 minutes over conventional methods that require a combined running time of 30 to 35 minutes . . (samples had to be heated in a resistance type furnace for 15 minutes to determine carbon content . . 20 minutes to determine sulfur content).

The Lindberg high frequency combustion unit used in this process is a rough and ready unit, designed and built by the makers of the famous Lindberg heat treating furnaces. It's engineered to heat samples at temperatures up to 3000°F . . substantially higher than previously practical with resistance element furnaces.

If you already have your high frequency equipment, you'll want to adopt this time saving process immediately. If not, check with your nearest Lindberg Laboratory Equipment dealer for details on the Lindberg "HF" unit and this new time saving process.



Here's how the new procedure works:

1. Put 1 gram metallic sample of unknown in ceramic cupelet. 2. Add approximately $\frac{1}{4}$ gram fine mesh tin to accelerate action . . and cover sample lightly with alundum to prevent splatter and minimize generation of iron oxide. 3. Place cupelet on induction unit pedestal, and raise to position in center of work coil, which surrounds a gas-tight "Vycor" glass tube. 4. Introduce controlled flow of oxygen which purges air from entire system and supports combustion. 5. Turn power from standby to plate position which starts inductive heating . . after 3 minutes, unit automatically switches from plate back to standby position. 6. Products of combustion flow to sulfur titration vessel where all SO_2 is absorbed. 7. Next, remaining products of combustion pass to sulphuric acid tower and magnesium perchlorate bulb for drying . . and then to standard type gravimetric determination bulb containing ascarite.

Now, to make the actual measurements:

1. Flush entire system for 3 minutes . . (then remove gravimetric determination bulb).
2. Titrate to get specific color change to show end point.
3. Read solution level (direct reading) to determine percentage of sulfur in sample.
4. Next, weigh absorption bulb to determine change in weight due to addition of CO_2 .

LINDBERG LABORATORY EQUIPMENT DIVISION

Lindberg Engineering Company • 2441 West Hubbard Street • Chicago 12, Illinois



Durasheath: for lower-cost power distribution

DURASHEATH* is a light, tough cable. It is easily installed and thoroughly dependable for series or multiple street lighting, traffic control, and airport† lighting, residential primaries and secondaries as well as for industrial plants and railroads. It may also be used as Type USE cable for underground service entrance.

DURASHEATH cable can save you money. You can run this flexible, easily handled cable underground (buried directly in the earth), over-

head or in ducts (or in any combination of these) without needless, time-consuming jointing. Its light weight and flexibility make duct pulling fast even in zero weather. Aerial assemblies go faster. Linemen like to work with it.

* * *

As one of several types of ANACONDA power cables, DURASHEATH is available in all sizes, single or multi-conductor, copper or aluminum,

from 600 to 15,000 volts. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.*

*Reg. U. S. Pat. Off. 58311

ANACONDA®

Primary and secondary distribution cables • building, machine tool, control and communication wire • portable cords and cables • bus-drop cables • apparatus cables • copper, aluminum, copperweld conductors • wire and cable accessories.



Three shifts a day ...and no time down!

Steel mill service demands rugged performance in a crane — three grueling shifts a day, 365 days a year — with no time down for maintenance. This calls for a truly extra heavy duty crane such as this 50-ton, 75-foot-span crane servicing an electric furnace in a large Western steel mill. It is just one of many cranes EDERER has "job-engineered" to the specific requirements of the steel industry.

EDERER — one of the largest crane manufacturers in the West — can "job-engineer" a crane to your requirements — whether for plant expansion or new construction.

Write for Crane Bulletin CR-500

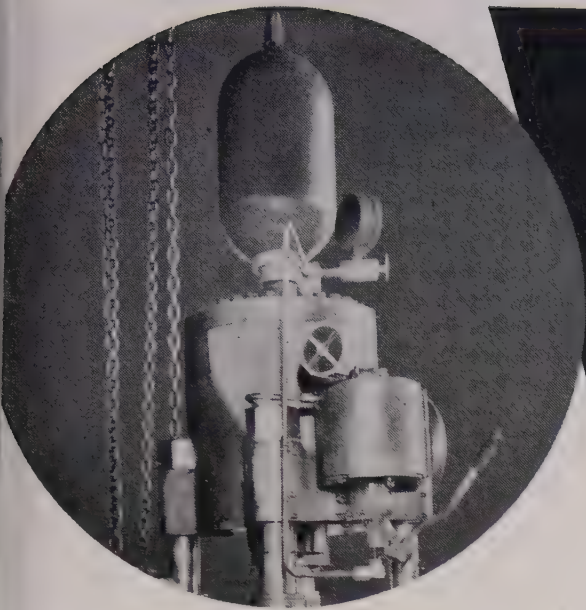
233C53

EDERER ENGINEERING COMPANY • 2935 First Ave. So., Seattle 4, Wash.

Export Division: 301 Clay St., San Francisco 11, Calif.

50 YEARS "JOB ENGINEERING" CRANES FOR INDUSTRY

EDERER CRANES



A Large Tungsten Carbide Manufacturer Licked a Problem by "Slugging" With a BALDWIN Compacting Press

The Problem:

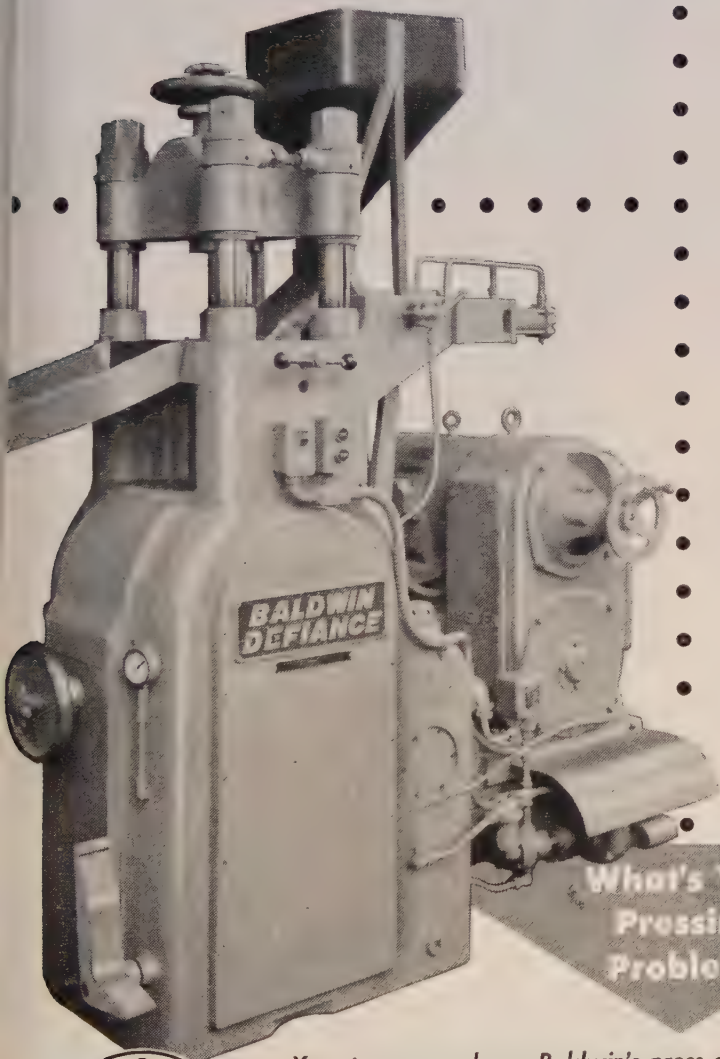
A large manufacturer of Tungsten Carbide wanted to compress a very fine 100 mesh Tungsten Carbide powder into a slug which was needed for the next production step. It was particularly difficult to obtain slugs of a uniform density.

The Baldwin Solution:

A Model 20 Baldwin compacting press with a "floating head" is producing the Tungsten Carbide slugs of constant density. Although the size of the slugs varies, the pressure applied to the fill by the ram is controlled accurately hydraulically.

The "floating head" does the trick . . . an accumulator mounted on a specially designed head controls the amount of pressure developed . . . when the ram tends to exceed this pressure, the head "floats" against the hydraulic cushion.

Baldwin Model 20 Compacting Press with "Floating Head" for pressures up to 75 tons. Model 45 (up to 200 tons) also available with "Floating Head."



What's Your
Pressing
Problem?



You, too, can rely on Baldwin's press engineering department to help you solve any of your compacting problems . . . pressing of powdered metal parts . . . preforming of plastics . . . pressing of ceramic parts. Write to Dept. 3846, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.

BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

Design

with a \$ sign —

(for savings in initial cost)

the new WALKER-TURNER

LIGHT-HEAVYWEIGHTS Drill Presses

This is an entirely new *class* of machines Walker-Turner has engineered. *Light-heavyweights*. For jobs where neither the capacity nor the expense of a large radial drill is warranted. Yet where the "hobby power tool" would be inadequate. In shipping and packing rooms, for example . . . in pattern and maintenance shops.

The new Walker-Turner Light-Heavyweight line gives industry the capacity for short-run production work, without the necessity of heavy investment. It's design with a dollar sign, representing money saved. Walker-Turner makes 15" and 20" Drill Presses (in Bench, Floor, and Production models), as well as Radial Drills. Send for complete information. Simply write name and address in margin below.

WALKER-TURNER

• DIVISION •

KEARNEY AND TRECKER CORPORATION
PLAINFIELD, N. J.

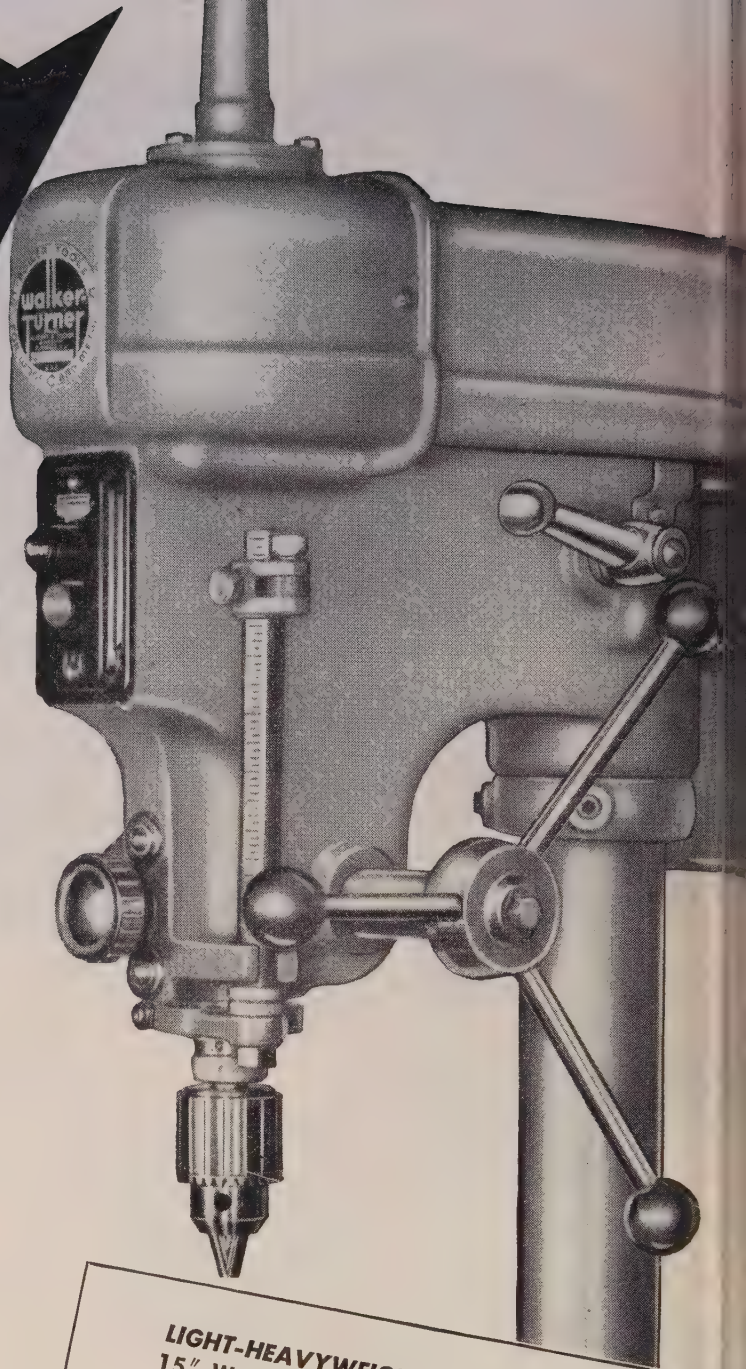
DRILL PRESSES — Hand and Power Feed • RADIAL DRILLS • Wood and Metal Cutting BAND SAWS • TILTING ARBOR SAWS • RADIAL SAWS
JIG SAWS • LATHES • SPINDLE SHAPERS • JOINTERS • BELT and DISC
SURFACERS • FLEXIBLE SHAFT MACHINES

**SOLD ONLY THROUGH
TRAINED INDUSTRIAL DISTRIBUTORS**

Use this space

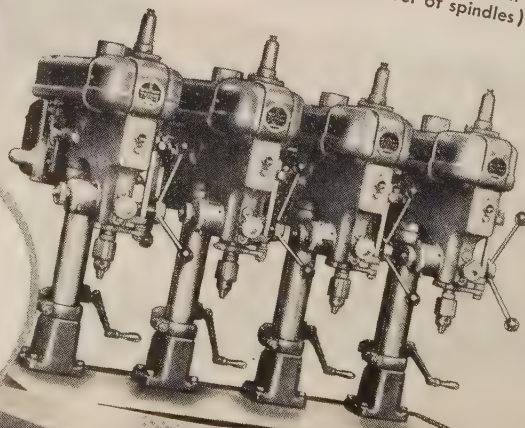
to write for full details and specifications.
Walker-Turner Division, Kearney & Trecker Corp.
Dept. 5-6, Plainfield, N. J.

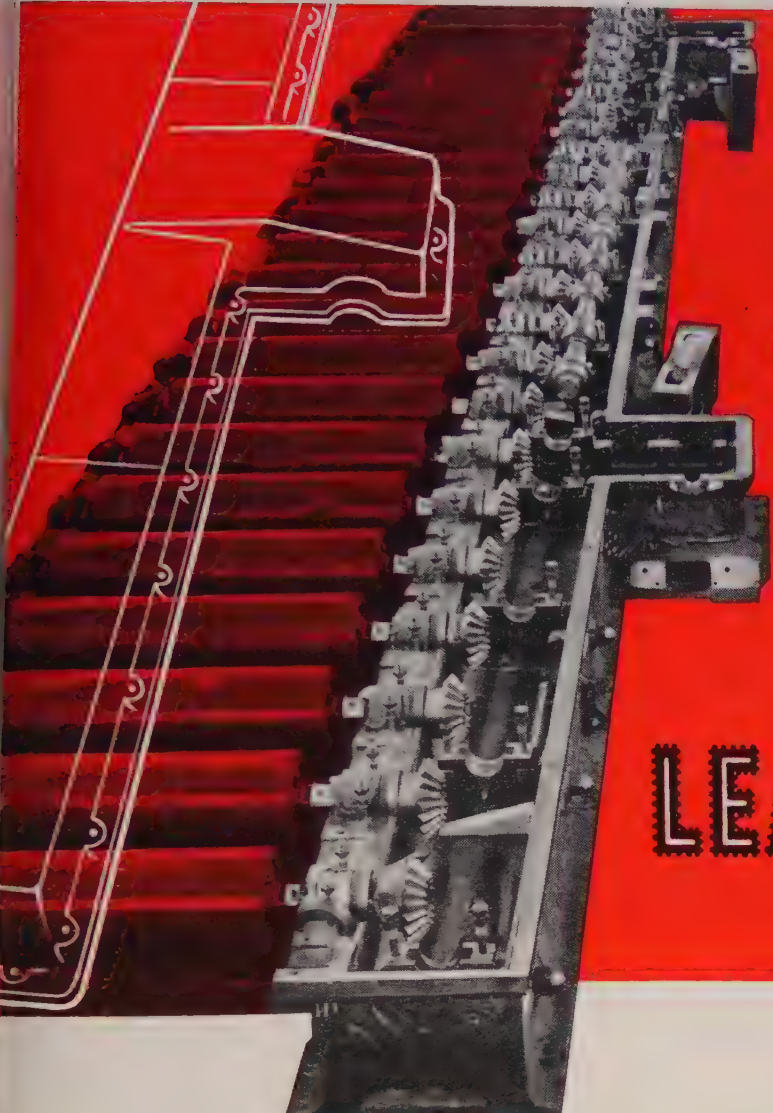
(Please write your name and address in margin of page)



LIGHT-HEAVYWEIGHTS "IN LINE"— 15" WALKER-TURNER DRILL PRESSES PRODUCTION MODELS

Designed for fast, accurate drilling at new low levels of investment and production costs. Features calibrated depth indicator. Capacity: 4 Spindle Production Model (shown)—18½" chuck to table, 7½" center of chuck to column. Six spline spindle mounted on 2 ball bearings, 4" and 6" travel. Four speeds—600, 1250, 2440 and 5000 r.p.m. with 1750 r.p.m. motor. Available in bench, floor, and multi-spindle models (from two to any desired number of spindles)





Why your
enclosed

Gears and Bearings

will work best

with

BROOKS

LEADOLENE

Enclosed gears . . . with their close tolerances, high speeds, shock loads, and great bearing and tooth loads . . . operate best when protected by Brooks LEADOLENE. With its "Indestructible pH-film Strength," this lead-based lubricant is definite assurance against pitting, galling, finning of teeth and abnormal bearing wear. The lubricating efficiency of LEADOLENE is not affected by water.

The following case history indicates the kind of service you can expect from LEADOLENE: "Although a good quality lubricant was used in a certain Cleveland plant's enclosed gear reduction

units . . . the gears, bearings and shaft journals required replacement so frequently that the reductions were taken apart every four months. At that time they were cleaned, some replacements were made and new lubricant was added. When LEADOLENE No. 90 was adopted as the lubricant, the reductions were operated for over two years with no replacements and no serious wear."

For reduction gear sets . . . mill table gear drives . . . or any other enclosed gear application—you will profit by standardizing on Brooks LEADOLENE as your lubricant.

WRITE for the 20-page brochure, "The Brooks Oil Story". . .
or for consultation by a Brooks Engineer.

With LEADOLENE you get these characteristics

pH-film Strength . . . 30,000 psi minimum.

Adhesiveness . . . Affinity for metal develops maximum adhesion providing permanent coating on gears.

Water Repellence . . . Effectiveness is not reduced by water.

Corrosion Prevention . . . Never acidic and will not etch or corrode.

Compounded Stability . . . Will not bleed or change physical condition within a greater temperature range.

Low Temperature Factors . . . Does not harden, crack or decrease in adhesion.

Abrasive Resistance . . . Repellent to adhesion of scale, metallics and other contamination.

THE BROOKS OIL CO.

Since 1876

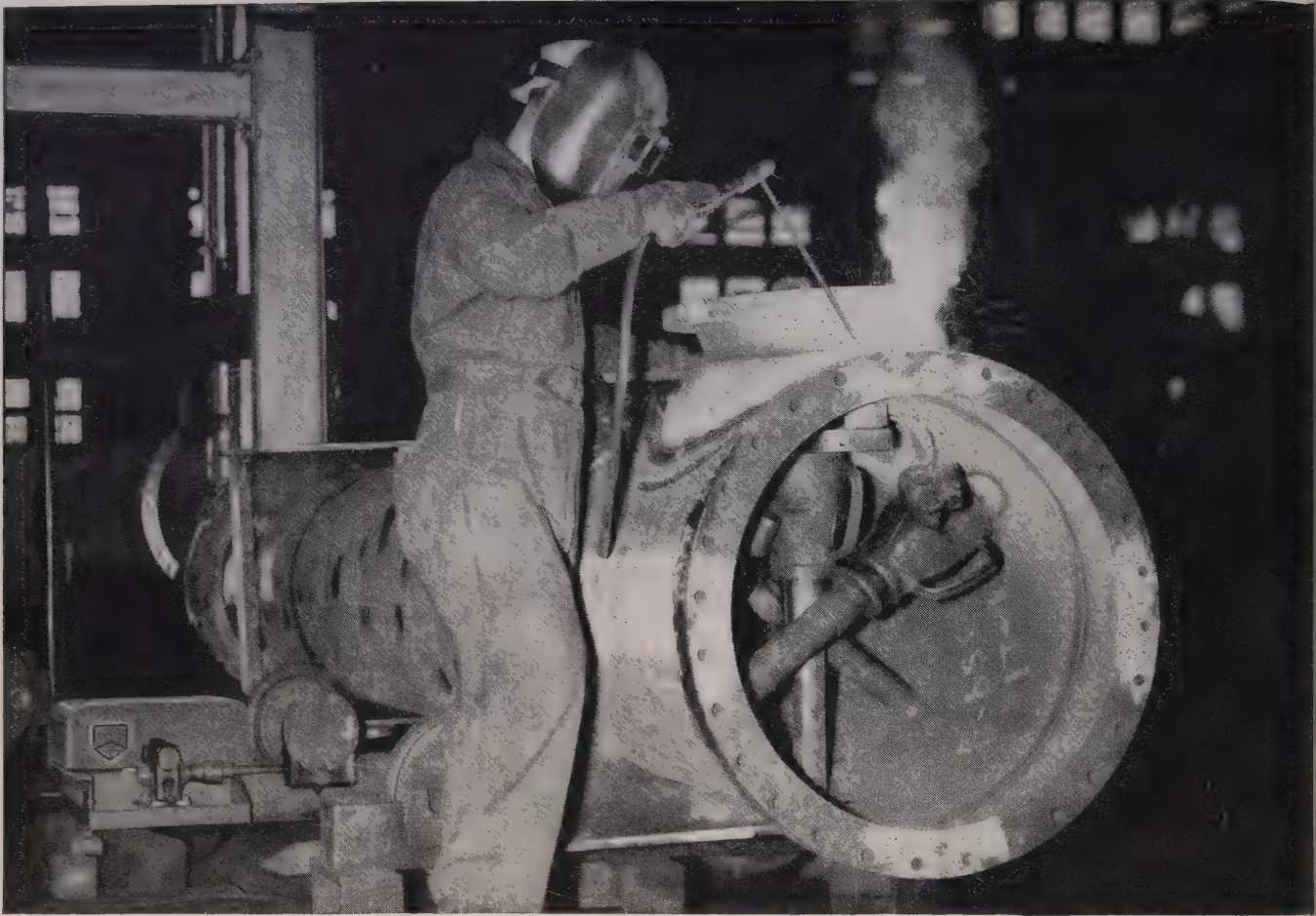
Executive Offices and Plant Cleveland, Ohio

Executive Sales Offices Pittsburgh, Pa.

Canadian Offices and Plant Hamilton, Ontario

Cuban Office Santiago de Cuba

WAREHOUSES IN PRINCIPAL CITIES



This welder can weld up to 50% more than he used to!

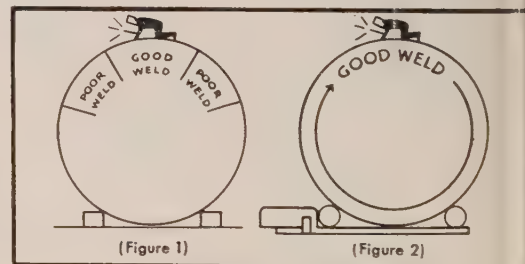
With Worthington turning rolls any welder can get better welds and turn out real footage

No problem to boost welding footage as much as 50% when you use Worthington Turning Rolls.

Previously the welder was forced to waste lots of time by having to crawl over cylindrical vessels, turn them by hand or wait for crane and hoist service.

With Worthington Turning Rolls at work his footage is soaring and he produces neater, stronger welds with less effort. Now, *power* turns the vessel at any selected welding speed as he quickly spots longitudinal seams or continuously welds circumferential seams.

To find out where you can see a nearby Worthington Turning Roll, just ask us. For more data, ask for Bulletin 228. Worthington Corporation, Plainfield, N. J.



WHY WORTHINGTON TURNING ROLLS
INSURE BETTER WELDS

Unless the work is turned continuously, good down-hand welding is obtainable only in small areas (Fig. 1). With a Worthington Turning Roll, down-hand welding is assured for the complete circumferential seam (Fig. 2) as well as all longitudinal seams (either by manual or automatic welding).

Y.2.1



Call Solar



FOR SUPER STEEL SERVICE FROM 16 SALES OFFICES

(see below)

If you wear glasses we will be glad to send you some of our new Sure Spec Sight Saver treated silicone tissues, to keep your glasses cleaner. Just ask for them on your business letterhead at our General Office address shown below.

*"and 8 Warehouses
serving the North Atlantic,
East Central, Mid West
and South."*



"for service dependable as the sun"

SOLAR STEEL CORPORATION

SURE



SPEC

General Offices: UNION COMMERCE BUILDING, CLEVELAND, OHIO

See your local classified telephone directory for our nearest office address

SALES OFFICES: Bridgeport • Chicago • Cincinnati • Cleveland • Detroit • Grand Rapids • Kalamazoo • Milwaukee • Nashville
Philadelphia • River Rouge, Mich. • Rochester, N. Y. • Toledo • Union, N. J. • Washington, D. C. • Worcester, Mass.

1803-1953

*J. Harley,
Casting Chilled Rolls, &c.
Patented Mar. 3, 1835.*

Drawings from Harley's patent of 1835, acquired by Mack-Hemp. The inclined pipes give a rotary motion or swirl to the molten metal. This was the inception of the modern method of casting with this spiral motion.

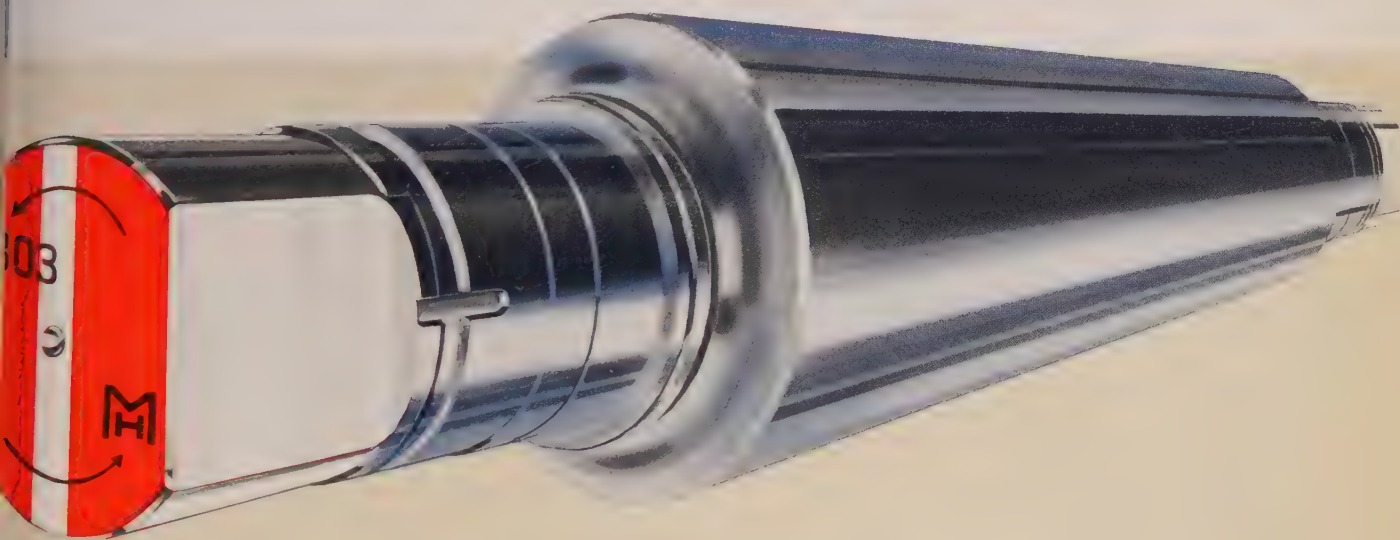


**THE METALLURGICAL
PROPERTIES OF ALL
M-H ROLLS ARE CAREFULLY
CONTROLLED FOR
MAXIMUM SERVICE**

Mack-Hemp's one hundred fifty years of service to the metals industry

Experience and Know-How... there's a hundred and fifty years of it in every Mack-Hemp Roll; *experience* obtained from every segment of the metals industry, and *know-how* acquired by years of *doing*.

As Harley's patent of more than a century ago indicates, Mack-Hemp has always kept pace with the metal-forming industry. 1953 is a continuation of this progressive policy—the M-H Roll line is modern and complete. Whatever your rolling mill requirements, we would like to discuss them with you.

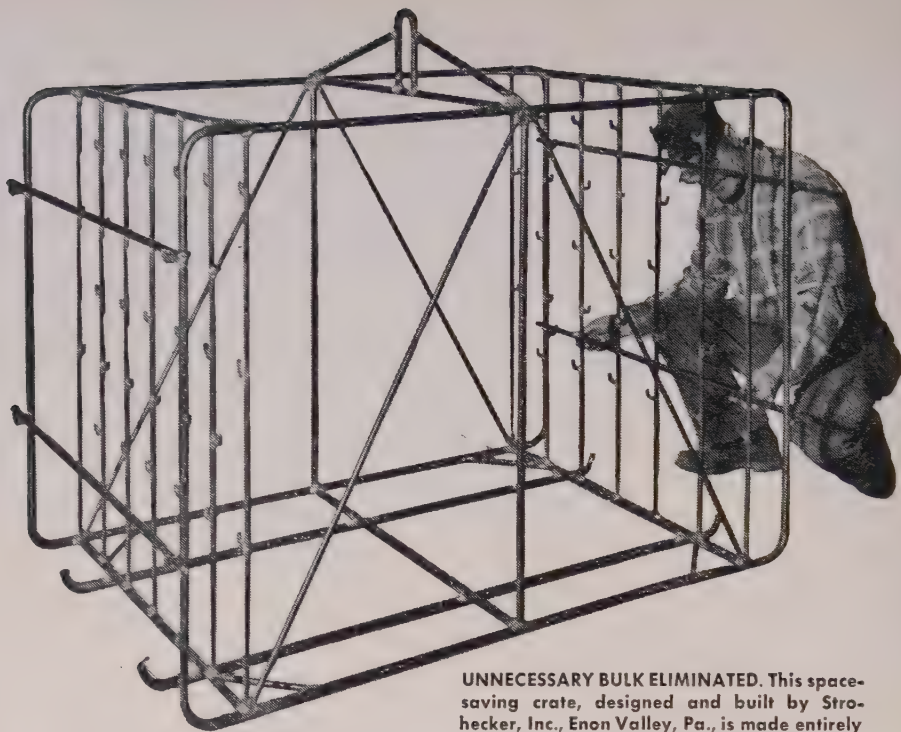


MACKINTOSH-HEMPHILL COMPANY

Makers of the Rolls with the Striped Red Wabblers

PITTSBURGH AND MIDLAND, PA.

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: rolls . . . steel and special alloy castings . . . completely integrated strip mills . . . heavy duty engine lathes . . . Mackintosh-Hemphill rotary straighteners . . . improved Johnston patented corrugated cinder pots and slag handling equipment . . . shape straighteners . . . end-thrust bearings . . . shears . . . levellers



UNNECESSARY BULK ELIMINATED. This space-saving crate, designed and built by Strohecker, Inc., Enon Valley, Pa., is made entirely of Monel bar. It was welded by ordinary shop methods, using "43" Monel gas welding wire, as recommended by Inco's Technical Service.

This sturdy, all-welded crate

**ADDS
50%
TO
PICKLING
TANK
CAPACITY**

Here's a crate that carries a special message for every user of pickling equipment.

Strohecker, Inc., of Enon Valley, Pa., designed it for a customer who pickles the long, steel reflectors used behind fluorescent lights.

Of welded Monel® construction, the crate weighs only 350 pounds, and safely handles a 1,000-pound load of reflectors. It operates in a sulfuric acid solution of 5 to 10% concentration held at 180 to 200° F.

Thanks to this compact, lightweight crate, Strohecker's customer is now getting a 50% greater payload into his pickling tank—on *every* load. He's saving not only time, but labor, power and acid. And that's only natural—because he's pickling more reflectors (and less crate!) on each trip into the acid.

Check your own equipment today. There's a good chance Monel can help increase the efficiency of your pickling room, too.

For Monel is strong... tough... long-lasting. It resists hot sulfuric and other pickling acids commonly used in steel mills. It stands the bumps and jolts that fracture less ductile metals.

In addition, Monel offers *workability*. It can be fabricated by ordinary shop methods. And it can be welded—welded so perfectly that the joints have all the strength and corrosion resistance of Monel itself!

Keep Monel in mind. It makes rugged crates and racks... hooks and hangers... yokes... chain... pickle bars and accessories. It is advisable to place equipment orders with your supplier well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability, from warehouse and mill.

The booklet, "Where Monel Pays its Way in Pickling," has been specially prepared to show you how useful Monel can be. Write us for your copy — now.



THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

Monel
PICKLING
EQUIPMENT

extra life
extra capacity
extra safety

June 1, 1953

Mr. Reuther's Effect on Mr. McDonald

The contract settlements in the auto industry (p. 70) will have an indirect, but profound effect on parleys in steel. Although the issues in the two industries are not quite comparable, Walter Reuther's successes with the auto companies will force United Steelworker President David McDonald to try to match them in his negotiations. And that factor may make him more intransigent when he resumes talks June 3 with U. S. Steel Corp.

Wages' Effect on Prices

If there is no steel wage increase, there will be no steel price increase—but prices definitely will go up if wages rise. Every 5-cents-an-hour wage boost "means an approximate increase in cost equal to about \$2 a ton for steel goods, including higher costs to us for the materials we have to purchase," points out Eugene G. Grace, chairman of Bethlehem Steel Co. (p. 66).

Likely: New Freight Absorption Law

Prospects are good for a law to be enacted by this Congress and approved by President Eisenhower clarifying the freight absorption situation. Several bills on the matter have been introduced in both houses. The one that finally gets passed will probably permit a company to match other prices as long as it can show it's doing it to meet competition. Such a measure got by the last Congress but not by former President Truman who vetoed it. The matter has increasing importance because steel companies, particularly, may want to resort to the practice later this year if supply surpasses demand.

Watch Out, Inventories Soar

Watch business inventories for clues as to what the economy will do next. Total stocks are now about \$75 billion, a record; auto dealers have an average of about 13 cars each on hand; and public warehouse space is jammed to an unprecedented degree, especially with appliances. A big inventory adjustment in the last half of 1949 was largely responsible for the business decline at that time.

The Works to Public Works

Congress is giving the works to public works proposals. The House Appropriations Committee recommends a cut of nearly 40 per cent for fiscal 1954 civil works to about \$416 million for such projects, compared with \$683 million requested by former President Truman and \$498.6 million asked by President Eisenhower. No funds are recommended for new projects.

No Consumer Study

Expect no federal study in the foreseeable future on where the consumer's dollar goes. In passing the \$4 million Federal Trade Com-

mission appropriation bill, Congress provided that no part of the money shall be available for a statistical analysis. FTC had started such a study and will abandon it. Similarly, a proposed Senate Committee on Consumer Interests has little chance of being established. The reason: Republicans in Congress feel that such a study or such a committee would tend to become too easily diverted to the cause of one or more special interests.

Youthful Market

Are you overlooking any metalworking markets made more promising by the great increase in the number of children in the U. S.? Rising toy sales attest to the growth of that market as the number of children under 10 has increased 57 per cent since 1940. American population has risen 22 per cent, and the number of family households has climbed by 33 per cent.

The Hazards of Debt

Business management relies on debt financing to a hazardous level, says American Institute of Management, New York. From 1946 to 1951 corporate debt rose 13.8 per cent, compared with only 6.3 per cent from 1922 to 1930. AIM says: "Many corporations . . . that entered the depression heavily encumbered with debt were responsible for greatly deepening and lengthening that depression. When we find that we are adding debt at a more rapid pace than in the 1920s, it is time to take a look at where we are going."

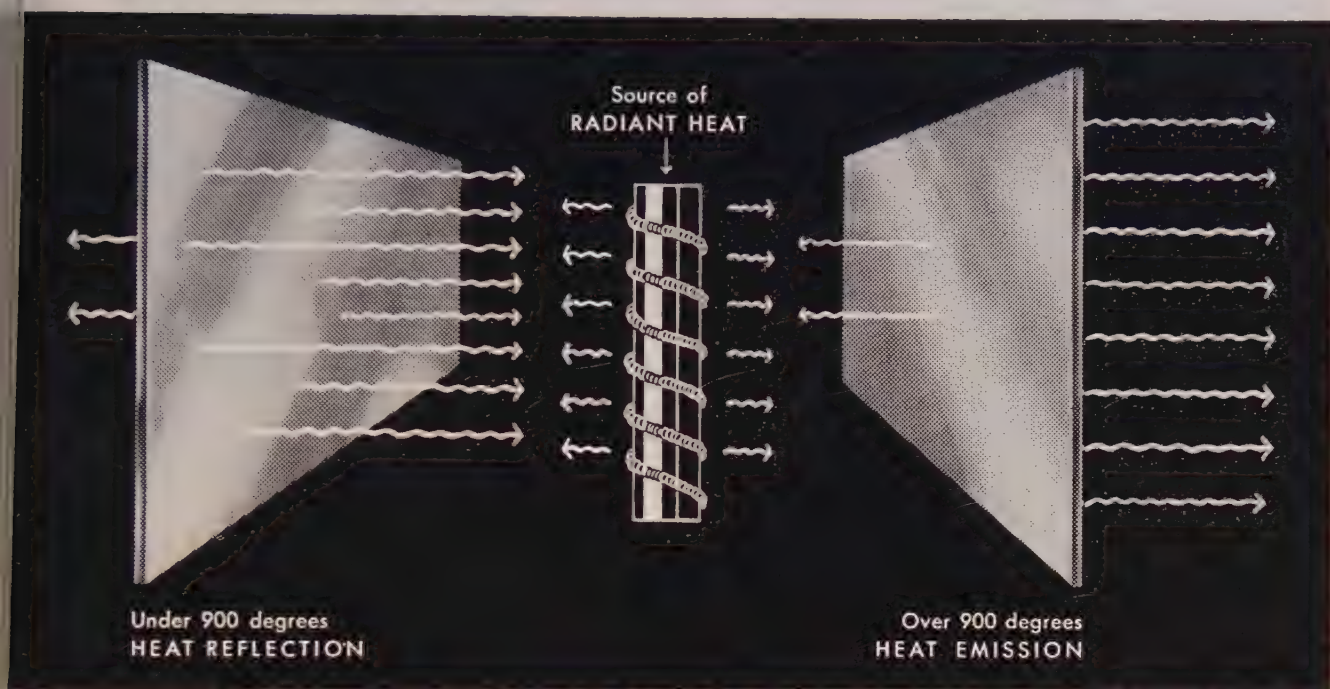
Straws in the Wind

American Institute of Steel Construction's summary of April bookings of fabricated structural steel, at 305,842 tons, was the highest reported for the last 24 months . . . Pig iron production in April amounted to 6,171,939 tons . . . Sear's summer catalog prices are, on the average, 6 per cent below those of the current general catalog . . . Kaiser Motors Corp., formerly Kaiser-Frazer Corp., cut prices \$100-\$125 on the Henry J . . . North American Aviation Inc. has designed an atomic-power generator and seeks a customer for whom it can build a \$10 million pilot plant to demonstrate and study the production of electric power for industrial and domestic uses.

What Industry Is Doing

Purchasing agents see a slight business decline ahead, but no depression (p. 65) . . . Steel distributors predict an easier supply situation in the last quarter (p. 67) . . . Unit air conditioner sales will be "real cool" in 1953, a record 650,000 units (p. 68) . . . An expected 10 per cent drop this year in nonferrous castings has thus far not materialized as volume parallels last year's (p. 69) . . . Munitions Board has just finished a study on scarce metals and their substitutes (p. 71).

Steel that REFLECTS Or EMITS Radiant Heat



Armco ALUMINIZED Steel, the steel with a hot-dip aluminum coating, is used for *either reflection or emission* of radiant heat.

At service temperatures under 900 degrees F, the aluminum coating is an excellent reflector of heat. Service at over 900 degrees F permanently changes the ALUMINIZED Steel from a reflector into an efficient emitter of radiant heat. That's because the aluminum coating alloys with the steel base, forming a tight gray surface layer of iron-aluminum alloy. This also gives the steel an unusually good refractory coating.

In its heat-reflection range (under 900 degrees F), Armco ALUMINIZED Steel is used for such parts as reflector panels for infra-red ovens, broiler reflectors and many other parts of ranges. In its heat-emitting range (above 900 degrees F) it is ideal, for example, in combustion chambers of oil and gas furnaces.

Armco ALUMINIZED Steel is also widely used for its fine combination of heat- and corrosion-resistance. There are hundreds of applications, from automotive tail-pipes and mufflers to barbecue grills.

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CONTINUOUS PROTECTION without blind spots is an inherent feature of EC&M VALIMITOR Starters, because the maximum fault current (KVA capability may be infinite) is limited to 25,000 KVA (steady state current) by EC&M VALIMITOR coils. Interruption of the current is by the well-known high interrupting capacity Type ZHS Contactor. No fuses to replace.

UNDER VOLTAGE PROTECTION—When voltage dips or power fails momentarily, motor will re-accelerate if normal voltage returns in two seconds or less. The contactor remains closed down to a low voltage with full spring pressure on the contacts. At about 25% control voltage, the contacts break cleanly—do not stick or burn.

Two views of a 2300 volt EC&M VALIMITOR aligning-type cubicle starter with self-contained bus at top for connecting power to all the starters for this installation. Door interlock provides "safety" against opening disconnect switches under load.



THE ELECTRIC CONTROLLER & MFG. CO.
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June 1, 1953



Interests Are Identical

In presenting the Edward G. Budd lecture for the Franklin Institute, Benjamin F. Fairless, chairman of U. S. Steel Corp., outlined fundamental changes that have taken place in the nature of industrial management during his lifetime.

"Back in the last century," he said, "even the largest of our industrial enterprises were owned by a single individual or family, or by a handful of men acting as partners in the venture. A hundred years ago, the average worker had about \$500 worth of tools at his disposal. Today he must use as much as \$100,000 worth of tools and machines in some of our largest industries. Also, a single company must often employ many thousands of such workers."

That is why it is no longer possible for one individual or a family to own a large enterprise. Today most big companies are owned by hundreds of thousands of people. Several large corporations have more owners than employees. Hence it is impossible for these owners to run the business themselves. They must hire professional managers to do it. This, believes Mr. Fairless, is the great fundamental change that has taken place in the character of management during the present century.

This hired manager has many bosses. In the case of Mr. Fairless, they consist of 289,000 shareholders, 100,000 customers and 300,000 fellow employees. The shareholder bosses want higher dividends. The customer bosses want low prices, high quality and immediate delivery. Employee bosses want more pay.

These desires do not really conflict. Since the worker's earning power depends upon the tools used, it is to his advantage that profits be large enough to provide him much better ones. It is to the owner's advantage that wages be high enough to attract workers who will use the tools to best advantage. Since the customer will buy only where he can get the best product at the lowest prices, it is important to both worker and owner that prices be kept at the lowest possible level.

To thus demonstrate convincingly that the long-range interests of owners, workers and customers are really identical is one of the most important jobs confronting American industry today.

EDITOR-IN-CHIEF

FORD'S CONTRIBUTIONS: Much is being made of the 50th anniversary of the Ford Motor Co. It would be difficult, indeed, to overestimate the influence of Henry Ford and his

company upon manufacturing, not only in the United States but throughout the world.

Probably the most important of his contributions to the economy of the world was the idea

that efficient manufacture of a product, such as an automobile, in great volume would reduce the cost per unit to the point where millions of persons could afford to buy it. This idea, which of course includes the philosophy of high wages, underlies most of the development of our mass production industries during the last three or four decades.

But great as has been progress in the automotive industry during this period, it is almost certain that with the new techniques and materials already in sight, advances during the next ten years will be even more spectacular than those of the last 50 years.

* * *

BUYERS CHAFE AT BIT: Usually the annual meeting of the National Association of Purchasing Agents provides a sounding board from which the layman can get a pretty good idea of what experts think about the short-term outlook for business. This was true in the convention of NAPA (p. 65) in Los Angeles last week.

In meetings and in corridor conversations, purchasing agents agreed that the remainder of 1953 would witness a fading of materials shortages. Prices will be steady. Business volume may decline somewhat in the third and fourth quarters, but nothing approaching a depression is in sight. There may be a tendency among some sellers to absorb freight charges on some commodities.

Most important of all, however, is the belief that a radical change in buying practices is about to take place. Buyers have been learning a lot during the prolonged period of the sellers' market. They await eagerly the opportunity to test their new ideas in a buyers' market.

* * *

LOOKS GOOD ON PAPER: Back in the inside pages of most newspapers appeared a Washington dispatch stating that "according to the estimates of the Civil Service Commission" the number of civilians on the federal payroll on May 1, 1953, was 2,506,000, compared with 2,556,500 on Feb. 1, 1953. If these figures are anywhere near accurate, they mean that the new administration has managed to remove 49,900 individuals from federal employment in a three-months period.

This is all to the good, but there are two factors to keep in mind. One is that it is ex-

tremely difficult to remove certain incompetents from the federal payroll. Secondly, all figures of civilian employment by the federal government are discouragingly inaccurate. It may take months or years to develop figures that can be trusted.

* * *

NEW USEFUL ELEMENTS: In his Charles M. Schwab lecture before the American Iron & Steel Institute last week, John Chipman, head of the Department of Metallurgy of Massachusetts Institute of Technology, told the fascinating story of how natural elements unheard of or ignored in steelmaking only a few years ago now are playing an important part in the development of improved steel products. Also, C. B. Post and H. O. Beaver, metallurgists of Carpenter Steel Co., speaking at an institute technical session, explained how rare earth elements are useful in improving the rolling and forging properties of certain stainless steels. As one thinks of how long it took the world to discover that bauxite and titanium are important materials, it is easy to believe that many other elements will emerge from obscurity in the near future.

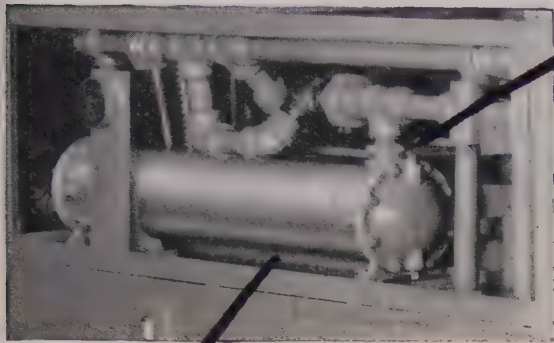
* * *

RED TAPE AND WASTE: Recently Raymond Moley devoted his newspaper column to the subject of waste in the State department. A Senate subcommittee charged that practically every departmental message is sent by cable. One senator stated that a single cablegram "to settle one little item" cost \$500. He said that the purpose could have been achieved with a 6-cent stamp.

This waste of \$499.94 is mild. A few years ago this writer, then a guest of the United States consul in a remote post, learned at breakfast that his host had been up half the night decoding a presumably "top secret" cablegram from the State department in Washington. Translations of diplomatic code showed that 90 per cent of the message was an excerpt from the *New York Times*. A few hours later an identical cablegram (in code) was received from another high source.

These cablegrams and their decoding cost several thousand dollars. A brief note and a newspaper clipping, tucked into the regular diplomatic mail pouch, would have served the same purpose at negligible cost.

For hydraulic fluid temperature safety in this H-P-M die casting machine



IT'S ROSS EXCHANGER EQUIPPED

Applying die clamping pressures up to 400 tons at top capacity and producing aluminum alloy castings weighing up to 12.2 lbs., this H-P-M Die Casting Machine is reportedly "putting the squeeze" on production costs.

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More facts are in Bulletin 1.1K5. Write for your copy.

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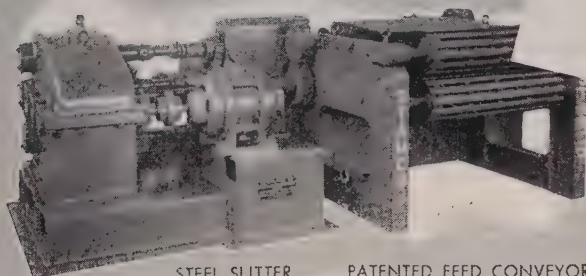


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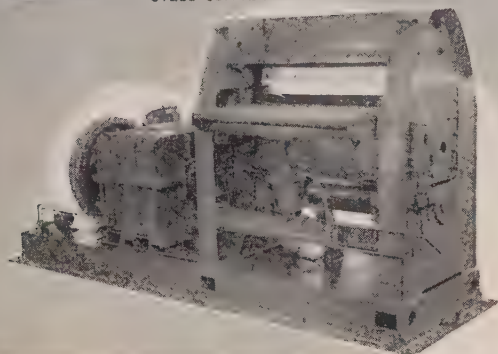
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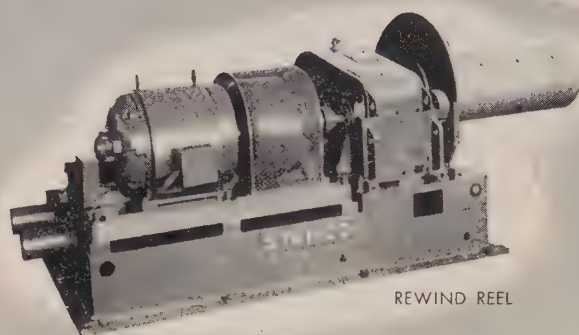
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Available in a wide range of sizes and speeds for warehouse and mill duty on ferrous and non-ferrous materials. Tell us your needs and we'll give you complete details.

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STAMCO, Inc., New Bremen, Ohio

Purchasing Agents Foresee . . .

- Fading Materials Shortages in Third and Fourth Quarters
- New Buying Policies
- Slight Business Decline in Second Half, but No Depression
- Steady Prices

MATERIALS SHORTAGES, which have plagued industrial buyers for 12 years, will fade away during the third and fourth quarters.

The CMP materials—steel, copper, aluminum—promise to improve steadily. This is the picture drawn by purchasing agents and material suppliers at the 38th International Convention of the National Association of Purchasing Agents in Los Angeles May 24-27.

There'll Be Changes Made—The 2450 buyers at the meeting say the more normal supply situation—at hand or in prospect—calls for sharp revisions in purchasing practices. For years, the buyers' problem has been to get the material. "Get it at any cost, but get it."

Now they are calling for a new look at all purchasing policies and many adjustments in materials management programs. "Price in effect at time of delivery" will become less popular and buyers will insist on firm price quotations.

From Flush to Glow—Purchasing agents view the business picture realistically. They express neither extreme optimism nor extreme pessimism. They believe the boomlet touched off by last November's election has reached its peak and that business over the remainder of the year will be slightly lower.

As Robert C. Swanton, Winchester Repeating Arms Co., chairman of NAPA's business survey committee, put it: "The glow of health will replace the flush of fever." (See the committee's June report, p. 84.)

No Gloom—While predictions of a leveling off in business were

common, neither buyers nor suppliers expect anything more than a healthy adjustment. Depression talk was scorned.

Steel Outlook—Balance in steel supply and demand will be reached on a product-by-product basis. Most wire products, nails, bolts and nuts are readily available at present. Hot and cold-rolled sheets, galvanized sheets, standard structural sections, carbon bars except in large sizes, and most forms of pipe and tubing will become increasingly available in third quarter. Heavy plate, wide-flange structurals, large bars and some alloy bars will continue tight.

Over-all Balance—The steel picture was presented by a panel of steel executives including: L. S. Hamaker, assistant general manager of sales, Republic Steel Corp.; Marcus J. Aurelius, vice president-sales, Columbia-Geneva Steel Division, U. S. Steel Corp.; Stewart S. Cort, general manager of sales, Bethlehem Pacific Coast Steel Corp.; and R. L. Asquith, tubular sales manager, Kaiser Steel Corp.

The steelmen believe steelworks operations will slough off in the third and fourth quarters due to lack of demand. Ingot production is estimated at 105 to 108 million tons for the year, with 58 million tons to be produced in the first half. Capacity during the year will increase from 117 to 121 million tons. Western mills may operate at capacity after eastern mills cut back, due to the deficiency of capacity in the West.

Freight Absorption—As a buyer's market returns in steel, watch for: 1. A resumption of freight ab-

sorption within restricted areas; 2. a return to firm steel prices.

Automobiles, construction, appliances and oil currently are exerting strong pressure for steel. Building is expected to continue strong throughout the year. Exploratory oil well drillings are expected to drop when the excess profits tax expires. The decline in exploratory drillings may be partially offset by an increase in offshore drillings as result of the return of the tidelands to the states. Auto production is being watched carefully. If buyers' resistance causes a downtrend, light flat-rolled steel will become available quick and in quantity.

Nonferrous Picture—The supply picture in nonferrous metals is bright in all except nickel. The nickel shortage will be with us for an indefinite period. Aluminum supply still is spotty to tight. With primary production this year estimated at 1,250,000 tons and expected to reach 1,500,000 tons or more in 1954; supply will overtake demand in early 1954. Copper is now in easy supply. Purchasing agents expect prices may decline, suggest careful review of inventories. Tin supplies are adequate. Prices have dropped 25 per cent since Mar. 31. No recurrence of a tin shortage is seen. Lead is available in sufficient quantities. Zinc supply can meet all demands. Cadmium is plentiful.

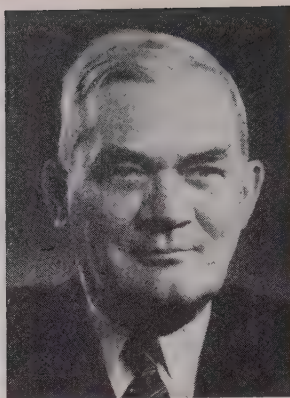
E. F. Andrews, Indianapolis, director of purchases for Pitman-Moore Co., Division of Allied Laboratories Inc., is new president of the NAPA. He succeeds H. W. Christensen of the Columbia-Geneva Steel Division, U. S. Steel.

AISI

Steelmen See Market Shakeout Coming Soon



T. M. GIRDLER
Republic



H. G. HILTON
Stelco



B. F. FAIRLESS
U.S. Steel

... steel executives look at the past and future in U.S. and Canada

WORLD MARKET conditions in steel are heading for a shakeout.

That's a conclusion of members attending and speakers at the general meeting of the American Iron & Steel Institute in New York May 27-28, a conclave with as much international flavor as any of the 61 such affairs held over the years. The tenor of opinion on markets was of high optimism for Canada, restrained optimism for the U.S. and slight pessimism for Europe.

High Optimism—The potential market for steel in Canada is great, but the possibilities are not yet fully realized because of a low population, points out H. G. Hilton, president of Steel Co. of Canada Ltd., Hamilton, Ont. Canada currently has about 14 million people, who consume the second greatest per capita quantity of steel in the world. Canada has a steel capacity of about 4.4 million tons annually, an increase of 110 per cent in a 12-year period.

A possible damper on his country's progress, Mr. Hilton believes, is the trend toward social-

ism. "Not only have we all the socialist gimmicks you've adopted," he says, "but a few peculiarly our own, including such honeys as family allowances."

Restrained Optimism — Unduly low steel prices are causing difficulties in the U.S., say some American executives. "They're too low in relation to costs," believes U. S. Steel Corp. Chairman Ben Fairless, "but we have no plans for increasing base prices at this time." Yet other officials, notably Eugene G. Grace, Bethlehem Steel Co. chairman, point out that prices will have to be raised if the industry is forced into a wage boost. He and others believe there is nothing in the picture from an economic standpoint that would justify an increase in wages, although steel workers threaten to strike by July 1 if they don't get it.

Republic Steel Corp. Chairman Tom M. Girdler set the keynote for optimism about the future when he said that vast improvements since the turn of the century are only introductions to the "marvels just ahead." He thinks

that the Republicans in Washington will relieve business for at least the next four years "of a lot of harassment in our work."

U.S. Challenge—American steel executives expressed a feeling of unusual challenge to make good in the next four years. "That's why we're even more concerned than usual about business conditions," one of them says. Most point out that they're doing well now, with only normal cancellations. Republic President C. M. White says, "We are due for some cutback in the fourth quarter or certainly in the first quarter next year but nothing of a serious nature." Mr. Fairless thinks there will be excess capacity by the end of 1954, if not before. He calls for new salesmanship and fair pricing.

The institute's executive vice president, Max D. Howell, believes "By the time the defense demand is completely satisfied, it is inconceivable that our ever growing economy will not provide expanding demands for steel to help keep our capacities in operation at a satisfactory level." He points out that the industry has spent \$5 billion to expand capacity 26 million tons in seven years since the end of World War II.

Slight Pessimism—Not so optimistic is Michael J. Layton, head of the International Relations Department of the British Iron & Steel Federation. "In the U.S. a new plant should soon make it possible to meet home demand and re-enter the export market in a more substantial way," he says.

He believes Western Europe's capacity may be as great as 84.



Schwab Lecturer Dr. John Chipman, left, sees great research developments in steel constituents, and AISI Executive Vice President Max D. Howell, right, points to postwar expansion in steelmaking



W. M. KELLEY
Republic



F. H. FANNING
Armco



R. S. POISTER
Crucible

... technical developments outlined at sessions chairmanned by these men

million tons by 1956, but that consumption won't surpass 69 or 70 million tons by that year. Mr. Layton has hopes that the Schuman Plan can eventually achieve some semblance of a mass market for steel, such as exists in the U.S., but he cautions that age-old problems of nationalism, separate currencies and others make the problem incredibly difficult.

Universal Optimism—But on the technical front, optimism is more world-wide for continued progress. Keynoting that outlook was the Schwab memorial lecturer, Dr. John Chipman, head of Massachusetts Institute of Technology's department of metallurgy. It seems inevitable, he says, that steel researchers soon will find important uses for still more of the 92 natural elements, some of which are not even considered at present in steelmaking practice.

Echoing these optimistic beliefs was William C. Bell, guest speaker from the British steel industry. He predicts that revolutionary effects on the European steel industry will result from the rapidly

spreading practice of using oxygen in bessemer steelmaking.

New Officers—At a board meeting Mr. Howell was elected executive vice president of the institute. He has been executive director and treasurer. Jones & Laughlin Steel Corp. Chairman Ben Moreell and Mr. Fairless were elected vice presidents. George S. Rose was re-elected secretary, and E. O. Sommer Jr. was elected treasurer. C. M. Parker gets the newly created post of assistant vice president of the institute.

J. H. Kelley, assistant superintendent, open-hearth and bessemer departments at Bethlehem's Sparrow's Point plant, was awarded the American Iron & Steel Institute Medal for his paper on "Developing the Use of Coke Oven Gas in Open Hearths" which was read before the institute's general meeting last year. Hobart M. Kraner and Charles N. Jewart, both of Bethlehem, were each given the regional technical meeting award in recognition of their paper on "Heating Up Open-Hearth Furnaces after Rebuilding."

ability of steel. Operators are still plagued by unbalanced stocks and face possible changes in their mill relationships as government distribution controls expire June 30, except for military and atomic energy requirements.

Producers of plates and shapes expect a noticeable sliding off in demand this summer with no danger of a serious recession, J. V. Honeycutt, Bethlehem Steel Co., Bethlehem, Pa., told warehousemen.

Poor Outlook—Railroad car plate requirements do not look promising for the remainder of the year. Car-builders' backlogs are shrinking and few new car orders are appearing. Mr. Honeycutt said that ship-building needs will taper off before year end, partly reflecting government cutbacks. As for structurals, he pointed out that the industrial expansion program is past its peak and steady improvement in shape supply can be expected.

Speaking on sheets and strip, Logan T. Johnston, Armco Steel Corp., Middletown, O., said continuance of the current strong demand depends on the way automotive business holds up. Should auto needs slacken 10 or 15 per cent, an appreciable easing in sheet supply would result almost immediately. Automobile sales will be a key to flat-rolled supply over the last half of the year, he said.

No Change—Since military requirements of large size bars are still increasing, not much change in their supply is in early prospect, reported J. F. Smith Jr., Inland Steel Co., Chicago, and Carl L. Huff of Bliss & Laughlin Inc., Harvey, Ill.

Five potential danger signs for the steel warehouse industry were discussed by Walter S. Doxsey, president of the association. He suggested that distributors study their operations in light of the following factors: 1. Removal of government controls; 2. equalization of supply and demand for steel; 3. return of the buyers' market; 4. rising unit costs, and 5. rapid growth of secondary points of steel distribution due to decentralization.

Mr. Doxsey was re-elected president and F. H. Lovejoy was named chairman of the group's executive committee.

Easier Warehouse Steel Supplies Soon

EASIER STEEL supply conditions will appear in the third quarter on some major steel products and will definitely be in evidence on most items in the closing months of the year.

This was the opinion of distributors meeting in Washington last week at the 44th annual convention of the American Steel Ware-

house Association. Their opinions were largely confirmed by a panel of steel mill sales executives at the closing business session of the three-day meeting.

Competition Coming — Warehouse operators anticipate a return to more normal marketing before year end, with competition stepping up apace with the increasing avail-

AIR CONDITIONING UNITS

TOTAL SHIPMENTS
SELF-CONTAINED UNITS

Source: U.S. Dept. of Commerce

*Estimated

1952 381,000*

1951 282,488

1950 257,263

1949 123,709

1948 111,620

1947 74,976

1946 47,664

1945 14,973

Air Conditioning Sales Set Records

Producers set sights at 650,000 household units this year. A boom in sales signals emergence of the air conditioner as a standard home appliance

AS THE thermometer climbs, so do sales of home air conditioners.

Production this year is far ahead of the comparable period in 1952. The industry is aiming for sales of 650,000 units in 1953, compared with 381,000 in 1952. Central units for cooling an entire house should account for 50,000 of this year's sales, the remainder being single room units. Increases have been steady since World War II, as shown by the chart on this page, and producers such as General Electric Co., Schenectady, N. Y., predict that a long-awaited boom is under way.

Booming Business—Some 50 producers made \$66.2 million worth of room air conditioners last year. Sales should pass the \$100 million mark before year end, as a constant flow of new companies enters the industry. Firms already manufacturing air conditioners are expanding. Worthington Pump & Machinery Corp., Harrison, N. J., plans to build a \$3.5 million plant in Decatur, Ala., for cooling equipment.

Units for cooling a single room are the most popular among consumers. The window model air conditioner is air-cooled with a compressor of from $\frac{1}{3}$ to $1\frac{1}{2}$ horsepower. Refrigeration capacity in tons is roughly equivalent to the horsepower. Best sales are in the $\frac{3}{4}$ -horsepower units, says Viking Air Conditioning Corp., Cleveland. Console models, standing on the floor, range from $\frac{3}{4}$ to one horsepower and these units are water-cooled.

Central Units—Affiliated Gas Equipment Inc.'s Bryant Heater Division, Cleveland, finds a better market in two, three and five-ton centrally-located coolers than in smaller single-room units. Larger water-cooled units ranging from one to five horsepower can be linked with ducts of forced warm air heating systems or installed as independent cooling systems.

Spokesmen of York Corp., York, Pa., report that shipments to dis-

tributors this year are 125 per cent ahead of the similar period last year. Despite this increase, York says sales have only scratched the surface in meeting the market potential.

Difficulties—Cost of operation, lack of space in houses and harmful publicity from poor installations have held sales down in past years. "Many houses are not adaptable to central air conditioning," remarked a midwestern producer. "Existing ducts for warm air movement may be too small for heavy cold air. New ductwork is costly and takes up valuable space. Poorly planned installations may cause air to lie along the floor. Window sill models protruding over the street are often unsightly or actually dangerous to persons underneath."

Answering these criticisms, Viking officials point to industry trends toward less bulky, more automatic equipment and combination heating and cooling units. Two years ago a central three-ton unit made by Viking took up $12\frac{1}{2}$ square feet. Now the unit occupies only $5\frac{1}{2}$ square feet. Compactness has reduced the unit's price to 80 per cent of the 1951 cost.

Prices Lower—As production increases, prices of room units have dropped until they compare favorably with other home appliances. Units made by Carrier Corp., Syracuse, N. Y., range from \$239 to \$474, with models costing \$329 and \$399 leading in sales.

Adding further to usefulness of air conditioning equipment, centrally coolers can be part of combination heating and cooling systems, using the same blower and ducts. A forced air furnace may be too small for cold air production, so Bryant couples two distinct units together for heating and cooling purposes. The heater uses oil and gas while the cooling unit is water-cooled. Sales of this unit are climbing so satisfactorily that Bryant officials say, "In time it

should seem as logical to cool a house in summer as to heat it in winter."

Plan Lakes' Largest Freighter

The largest freighter ever built at a Great Lakes port, a 23,200-ton cargo carrier, has been ordered by National Steel Corp., Pittsburgh. American Ship Building Co., Cleveland, will construct the ship at its Lorain, O., yards.

M. A. Hanna Co., Cleveland, will operate the new National ship. To be built for an estimated \$7 million, it will be 710 feet long, with a beam of 75 feet.

As yet unnamed, the vessel's keel will be laid at Lorain about Sept. 15, and her maiden voyage should occur near midseason in 1954. An 8500-horsepower steam turbine, will power the ship.

Although four feet shorter than Hanna's 714-foot *Joseph H. Thompson*, the new ship will be the widest bulk carrier on the lakes. It will top by several thousand tons the capacity of the *Thompson* and Hanna's *E. T. Weir*.

Fenimore Plans Ore Project

Fenimore Iron Mines Ltd., Toronto, Canada, is negotiating with a Dutch coal and iron ore firm, N. V. Handels-En Transport-Maatschappij (Vulcaan), Rotterdam, Holland, for financing its proposed development for concentrating iron ore in the Ungava bay area of Quebec. The deal depends on Vulcaan getting Ruhr steel companies interested in obtaining the Canadian ore. German companies would supply mining machinery through Vulcaan in exchange for ore.

Dr. Joseph A. Retty, Fenimore president, estimates that 566 million tons of ore lie in his company's property. Over-all engineering estimates for the proposed open-pit project are about \$68 million. The company believes 55 per cent ore could be delivered on boats at tide-water on Ungava bay for \$6.93 a ton, allowing for processing and pelletizing.

A prospective customer is British Iron & Steel Corp., which might take as much as 300,000 to 400,000 tons a year. Since its water route is open only four months a year, Fenimore might ship ore to east coast ports and stockpile it.



Alcoa

FIGURES IN NET TONS, EXCLUDING DIE CASTINGS

	ALUMINUM	COPPER & COPPER ALLOYS	MAGNESIUM
1952	179,623	500,825	15,000
1953*	198,000	500,000	16,000

*Estimated by STEEL

No Softening in Nonferrous Castings

THE PREDICTED 10 per cent drop in shipments of nonferrous castings has not materialized thus far in 1953. In fact, gains are in sight for aluminum and magnesium castings.

That's not surprising: The two props under nonferrous casting business—defense work and civilian consumer durable goods—remain strong and steady.

Covering Low Spots—Defense work takes about 40 per cent of brass casting tonnage, 60 per cent of aluminum, 95 per cent of magnesium sand castings and large tonnages of permanent mold magnesium castings. Those are approximately the same percentages which prevailed a year ago. Only scattered reports of appreciable cutbacks in defense work are heard. And even then, "Civilian volume is taking up any spotty slack in military work," says F. L. Middleton, Ajax Metal Co., New York. "But on the whole, military volume is holding and there is little slack to take up."

Willing To Work—However, all is not easy pouring in the industry. Eastern captive shops which are engaged in maritime work, such as castings for gyroscopes, pumps and navigational instruments, are not spilling work over into jobbing

foundries. The result: Most of these jobbing shops are able to maintain a five-day week only with a struggle. Another unfavorable sign is the dwindling of jobbing contracts from captive foundries producing parts for housing meters. Many of the current housing requirements were anticipated with high stocks on hand and the feeling seems to be one of coast along for a while, pending further developments.

Will the present tide of business carry through the rest of 1953? Generally, the castings industry will follow very closely the activities of castings customers. At the moment, that outlook is good.

Two Up—Specifically, aluminum castings shipments should surpass 1952 levels by 10 per cent if the metal is available after stockpiling requirements are met. And Arthur S. Flemming, ODM director, says stockpile metal will come entirely from special production sources in the third quarter and won't cut into industry's share of primary aluminum (see STEEL, May 25, p. 206). Brass and bronze tonnage will be somewhat below last year's level, but still good. Magnesium castings, the only type to show consistent gains, will continue to grow, at least 5 per cent in 1953.

Quick New Contracts for Auto Workers

Automakers value production more than winning lengthy labor disputes. General Motors, Ford and Chrysler contract revisions are liberal and swiftly enacted

CONTRACT REVISIONS involving Ford Motor Co., General Motors Corp., Chrysler Corp. and the United Auto Workers, CIO, illustrate the pattern of management's thinking on industrial relations in 1953.

As predicted by STEEL (Jan. 19, 1953, p. 45), both workers and producers are primarily interested in keeping the wheels of industry turning, without lengthy disputes.

Three Agree—After announcing the amended GM pact last week, Walter P. Reuther, president of the union, said the UAW would advance quickly on Ford and Chrysler Corp. Revisions of the Ford contract closely followed GM's lead, with a liberal pension plan in addition. Union talks with Chrysler—completed late last week—produced the same result as negotiations with Ford.

Frequent strikes in auto parts plants preceded contract negotiations. On May 22 Ford had 60,000 workers idle as a result of scattered work stoppages. Of 19 Ford motor assembly plants, only four were still running. Some 44,200 Chrysler workers were made idle. Wildcat strikes can halt production nearly as badly as a general walk-out, but labor doesn't want a big strike this year.

First To Sign—GM's agreement with CIO auto, electrical, radio and machine workers affected wages of about 390,000 employees. Provisions included changing to the "revised" Bureau of Labor Statistics price index on the basis: 1947-1949 = 100. A total of 19 cents of the present 24-cent cost of living allowance will be transferred to employees' base rates. The amount of wages subject to downward adjustment from present levels is now limited to five cents an hour, no matter how much the cost of living drops.

The annual "improvement for productivity" factor will increase from four to five cents an hour at GM, under terms of the revised agreement. In addition skilled

trades workers will receive a raise of ten cents an hour.

Ford Follows — Ford reached quick agreement with the United Auto Workers. Provisions of the revised five-year contract were similar to GM provisions, but also provided for maximum pensions of \$137.50 monthly, including Social Security benefits. The pension scale under the former (1950) contract was \$125 a month. Having secured a higher pension from Ford, Mr. Reuther returned to GM and asked a similar hike.

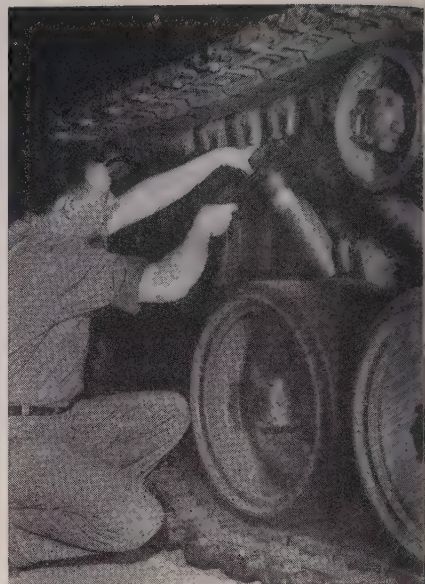
Although automakers settled their labor problems with no long lapses in production, Mr. Reuther never appears satisfied. He now complains that emphasis on a high production pace will result in mass layoffs late this year. In reply, Harlow H. Curtice, GM president, says, "Currently we are producing cars at a rate that does not satisfy the requirements of our customers. The customer controls our rate of production."

Industry Studies the Atom

Private industry's participation in atomic energy development takes a step forward with reports to the Atomic Energy Commission made by industrial representatives working on nuclear power reactor technology.

Four separate industry teams spent a year appraising the prospects for participation in joint production of electric energy and fissionable material from reactors. Joining in the studies were representatives of eight chemical and electric companies.

The companies assumed all costs incurred by their groups. Their reports call attention to many different reactor designs that might be followed. All groups agree that dual-purpose reactors are technically feasible and could be operated in such a fashion that the plutonium credit would reduce power cost. All agree (STEEL, Mar. 2, p. 86) that no reactor could be constructed very soon which would be



Beating the Bumps

Constant friction snubbers originally designed for railway trucks now give the Patton 48 tank a smoother ride. Chrysler Corp.'s Ordnance Development Department designed them

economical on the basis of power generation alone.

Standby for CMP

How to reactivate an improved Controlled Materials Plan in the shortest time for any future war mobilization was discussed May 21-22 by Office of Defense Mobilization officials and a group of industrialists, most of whom had served in the WPB or the NPA.

With abandonment of CMP on June 30, statistical information which industry has been furnishing to implement that plan will be shut off. Unless ways of expediting reports from metal consuming industries on their requirements of steel, copper and aluminum are found, it would take fully six months, possibly twelve, to come up with authorized allotments of these metals in a future emergency.

While no definite procedure was arrived at, those at the meetings agreed it will be necessary to call upon metal consuming industries to report such basic information periodically. Agreed to, also, was that the ODM staff should continue to seek means of reactivating CMP with least delay and particularly, compilation in peace time of statistical information which would shorten the transition from DMS to CMP in case of all out war.

Don't Waste Metal!

Scarcities demand careful use of several metals hard to get in event of total war

URGENT NEEDS for conserving scarce metals are pointed up by Munitions Board bulletin for guiding use of metals.

Strategic metals of the highest importance are nickel, cobalt, tantalum, columbium, beryllium and tungsten, in order of scarcity. Obtained largely from outside the continental United States, they are now in short supply and would be exceedingly scarce in a total war.

Essential Materials—When only one material can perform a necessary job, the Munitions Board suggests that adequate quantities of that material be set aside, even at the cost of taking metals away from an equally necessary task. Not all users are "entitled to a share" of scarce metal, the board says.

While tungsten is considered scarce and strategic, its best substitute for many applications, molybdenum, is not. Some 95 per cent of world production of molybdenum is in the United States. Since requirements for that metal are high, the Munitions Board says only moderate substitution of molybdenum for tungsten would be desirable.

Extreme Scarcity—Because of the extensive use of nickel as an alloying element in guns, armor, ships, vehicles and jet engines, the report states that every use of nickel should be carefully evaluated and an aggressive program begun to develop alternate low alloy steels.

Listed in order of scarcity for use as nonferrous alloy constituents are beryllium, nickel, tin, antimony, copper, manganese and zinc. Properties which beryllium confers upon bronze are so significant and the metal's availability so uncertain, says the Munitions Board, that users should take considerable effort to conserve and recover it.

Supply Lags—Copper and nickel are used as alloy constituents in a wide variety of applications, and consumption usually outstrips supply in wartime. Hence every ef-



Driving Force

Speeding production of military aircraft at Kaiser-Frazer's Willow Run, Mich., plant, a dozen machines automatically drill holes and drive over 1000 rivets an hour in parts like this 30-foot floor section

fort should be taken to economize on their use, the board continues. Alternate materials should be used whenever possible.

Among metals used as protective coatings, rhodium, osmium, platinum, indium and cadmium are in the most critical supply. In considering applications of scarce metal coatings over other metals, the Munitions Board suggests studies to determine if an oxide, ceramic, nonmetallic paint or plastic coating could be used instead.

Savings — Statistics issued by the Munitions Board show that conservation programs of the armed forces last year saved 15.4 million pounds of aluminum and 13.9 million pounds of copper. Some 9.3 million pounds of scarce nickel were conserved, as were 4 million pounds of zinc.

CHECKLIST ON CONTROLS

Controlled Materials Plan

SURPLUS MATERIALS—Direction 23 to CMP Regulation 1 (production) and Direction 13 to CMP Regulation 6 (construction), both issued and effective May 22, 1953, permit persons who have surplus controlled materials (except nickel-bearing stainless steel) and Class A products which cannot be used for the purpose for which acquired to use such materials and products for other pur-

poses or sell them without restriction. Persons buying such materials may use them without charging allotment authority. The directions will be in effect during the remainder of this quarter.

NONMILITARY MRO—CMP Regulations 5 and 7 were revoked on May 25, 1953, effective July 1. Revocation of the inventory provisions of Regulation 7 was effective May 25. CMP 5 is the general nonmilitary MRO regulation for business firms, and CMP 7 covers commercial repairmen and installers not otherwise covered by CMP 5.

Materials Orders

NONMILITARY MRO—NPA Regulations M-78 and M-87 were revoked May 25, 1953, effective July 1. The inventory provisions of both orders were revoked immediately. M-78 is designed to assist the mining industry to obtain necessary MRO supplies, and M-87 provides similar assistance for solid fuel industries.

COPPER WIRE, BRASS—NPA Orders M-82 and M-86, providing for control of distribution of copper wire mill products and brass mill products to distributors, were revoked May 26, 1953, effective July 1. Provisions of each order limiting inventories were revoked immediately.

COMMUNICATIONS — NPA Orders M-77 and M-85, providing materials and priorities assistance for the nation's communications system, were revoked May 26, 1953, effective July 1.

NONMILITARY MRO — NPA Orders M-70 (marine), M-73 (rail systems), M-79 (export) and M-105 (iron and steel), providing MRO assistance to those industries, were revoked May 26, 1953, effective July 1.

Appointments in Washington

William D. Mitchell, assistant to the president, Quick-Way Truck Shovel Co., Denver, was appointed administrator, Small Defense Plants Administration, subject to Senate confirmation.

Henry Parkman, Boston attorney, was named assistant director of the Office of Defense Mobilization in charge of nonmilitary defense programs.

The Iron & Steel Division, National Production Authority, is reducing the number of its steel product sections. The new setup includes:

Flat-Rolled Steel Section (plates, sheet, strip and tin mill products)—Chief, J. D. Coffinberry, Republic Steel Corp.

Semifinished Section (hot-rolled bars, structural shapes and rails)—Chief, Clyde H. Ten Eyck, U. S. Steel Corp.

Cold-Finished Bar & Wire Section—Chief, J. E. Nyhan, La Salle Steel Co.

Pipe & Tube Section — Chief, L. Mason, U. S. Steel Corp. (to be succeeded on July 1 by John De Hetre, Youngstown Sheet & Tube Co.).

Stainless Steel Section — Chief, C. Mitchell, Allegheny Ludlum Steel Corp.

Super Alloy, Alloy & Tool Steel Section—Chief, W. S. Eberly, Carpenter Steel Co.

Casting Section — Chief, Kenneth Smith, National Malleable & Steel Castings Co.

Forging Section—Chief, J. E. Sweeney.

Windows of Washington

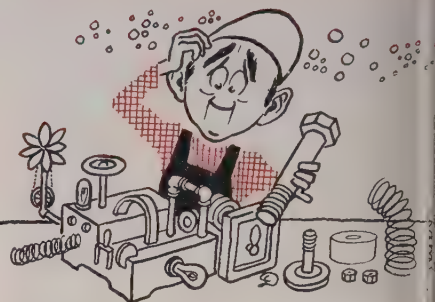
By E. C. KREUTZBERG Washington Editor



I got the low bid. It's my contract . . .



If you'd give me a little extra help . . .



Now what was I going to make?

Arguments are strong against an independent Small Business Administration in Washington. Small firms don't want too much assistance

SPOKESMEN for small business pumped strongly for H. R. 5141—the bill to create a permanent, independent Small Business Administration to succeed the Small Defense Plants Administration on July 1. If they understood the real effect of such assistance, the great majority of small businessmen would oppose government involvement.

This is the opinion of many Defense department procurement officers who contend that when government assistance is given to a small firm, it usually is at the expense of other small firms and of the taxpayers. Too often, they add, such assistance is given for firms weak in management, technical know-how and capital.

An Example—Here's a case that occurs often: Company A needs business and puts in the low bid on an Army, Navy or Air Force requirement for which it has had no experience. The procurement officer would prefer to place the contract with Company B which has done the work satisfactorily in the past, but whose bid is higher than that of Company A.

The latter company, whose regular product may be far removed from defense work, gets a certificate of competency and approval of a loan application from the small business agency. The procurement officer has no recourse but to award the contract to Company A.

Bad Luck—From this point, the

procurement officer sits back and keeps his fingers crossed—for Company A frequently runs into trouble. In some cases the contracts eventually have to be cancelled, while in a substantial number of cases Company A winds up in financial difficulties.

A government small business agency would enable congressmen to pass on complaints or requests for assistance from small business concerns back home. Such complaints and requests are more likely to come from weak firms than from the average self-reliant company.

Objections—Strangely, the only criticism of H. R. 5141 from a business group was not concerned with the provision to force procurement officers to award contracts to low bidders certified as competent by the proposed Small Business Administration. It was aimed at the proposal to allow this agency to make small business loans in competition with private banks. This position was expressed by the American Bankers Association.

Rich Pickings . . .

The House Appropriations Committee reveals one reason Sen. Joseph McCarthy and other Communist-hunters are finding much to investigate among past and present government employees.

Committee findings are that the FBI has discovered "some indications of disloyalty" in the cases of 25,748 actual or potential fed-

eral employees since 1947. The information said that 444 of these employees were removed or fired, 5198 quit before their cases were disposed of, and 14,904 were retained by the loyalty boards in their own agencies in spite of FBI findings.

Standby Plants Foreseen . . .

Look for early announcement by the Defense department of a plan whereby, in event of war emergency, a standby military end-item production plant would be manned overnight by transferring employees from a nearby civilian plant.

AEC Patents for Industry . . .

Among patents made available by the Atomic Energy Commission for nonexclusive, royalty-free use by industry are two covering apparatus for attaching filaments to electrodes in machines for coating with metal vapors. They are numbered 2,637,297 and 2,637,298 and copies may be obtained from the U. S. Patent Office. The inventor is Z. M. Shapiro.

Study Solar Energy . . .

This year's solar energy conference will be of particular interest to industry, since it will deal with converting that energy into harnessable forms such as heat and electricity.

The conference will be held Sept. 12-14 at the University of Wisconsin. The National Science Foundation has granted \$6000 toward the expenses.



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Britain Drops Steel Rationing

The Minister of Supply told Parliament that the end of steel rationing was possible even assuming a 6 per cent increase in consumption this year. Steel imports will drop

STEEL RATIONING has ended in Great Britain. Production outpaces last year's rate thus far in 1953 and the outlook is for further gains.

Sole exception to the May 6 decontrol order is tin plate which remains under informal allocation.

Output Up—Steel production in April averaged 348,500 tons a week, equalling an annual rate of 18,124,000 tons compared with an annual rate of 15,866,000 tons in April, 1952. Pig iron output, April, 1953, averaged 212,800 tons a week, also up from 201,400 tons a year ago.

Welcoming the end of steel rationing, the British Iron & Steel Federation predicts steel production will be at least 17.5 million tons this year. That's a prospective increase of more than 1,360,000 tons over 1952 on a comparable 52-week basis. The increase should make possible reductions in high-priced steel imports which totaled \$1,822,000 tons last year.

Focus on Tariffs

Still on the fence on the question of lower tariffs and increased foreign imports?

Meyer Kestnbaum, chairman of the board of the Committee for Economic Development, has brought out some facts which may help you get the picture into proper focus. These statements were made in a report before the U. S. House of Representatives Committee on Ways & Means.

"In 1952 our exports amounted to \$15 billion, or 4 per cent of our gross national product of \$346 billion. While they appear small in relation to our total production, exports are responsible for the employment and high wages of many workers in our most important industries. Exports are important to many of these industries: 25 per cent of our textile machinery production, 22 per cent of our machine tools, 21 per cent of our tractors, 19 per cent of our printing machinery, 16 per cent of our oil field ma-

chinery, 13 per cent of our diesel engines, 11 per cent of our motor trucks and 11 per cent of our agricultural machinery were exported in 1950.

"The exports of American goods to other nations must be paid for. Unless other countries are able to obtain dollars, they will be unable to buy American products. The principal ways in which other countries can obtain dollars are by selling their goods to us or receiving aid from us in grants or loans.

"Last year U. S. imports totaled \$11 billion, or a little more than 3 per cent of our national output. Most of these imports consisted of raw materials essential for our own production—the tariff issue is not importantly involved in the case of most of these raw material imports.

"Our imports of finished goods totaled \$2 billion, and of this \$2 billion only about \$1 billion, or three-tenths of 1 per cent of our total na-

tional output, were subject to duties. It is around the question of a moderate increase or decrease in this \$1 billion of imports that the tariff question revolves."

Institute on Foreign Trade

The University of Illinois and the Illinois Manufacturers' Association are jointly sponsoring an Institute on International Trade for businessmen from July 12 through July 18. Topics of the institute include: Creation and Promotion of Foreign Markets; Foreign Corporations and Subsidiaries; Taxation in Foreign Trade; Monetary Restrictions and Arbitrage in Foreign Trade; Financial Arrangements in International Trade and many others.

Faculty for the institute was recruited from U. of I., from government, and from leaders in manufacturing, banking, foreign trade and the legal profession.

German Output Sags

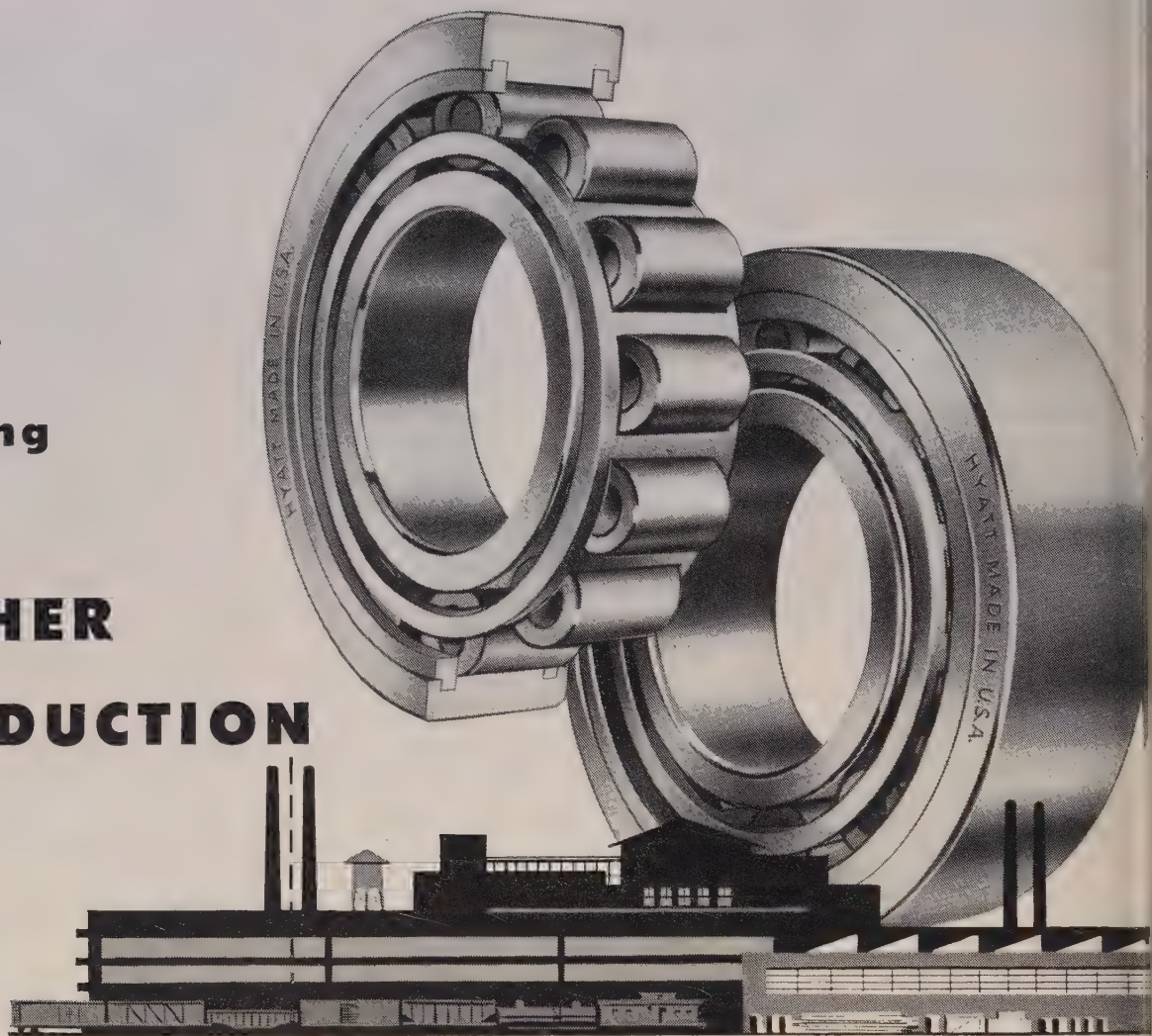
Lower market prices for foreign iron and steel depressed German output in April to 978,191 tons and 1,275,247 tons respectively from March production of 1,143,151 tons and 1,468,239 tons.



Firsts in American-Israeli Trade

All-welded 18,000-gallon storage tanks for butane and propane gas are destined for the American Israeli Gas Corp. Ltd. (AMISRAGAS), in Tel-Aviv, Israel. Constructed in American Car & Foundry Co.'s Milton, Pa., fabrication plant, the steel tanks are the first of their kind for any Israeli installation. The tanks will be used for storage and distribution of LP-gas

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ROLLER BEARINGS

Cradle for Automation

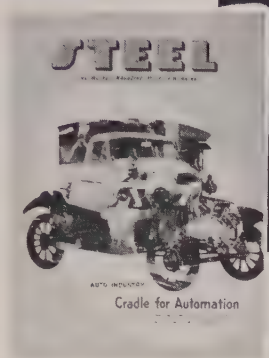
As auto companies reach their 50th year, past production triumphs are being proudly recounted. But the ten years ahead loom more exciting than the 50 past

MASS PRODUCTION is more synonymous with auto manufacture than with any other major industry in our economy.

Because of the 50th anniversaries of Ford and Buick this year, it's natural to look back at the progress made in mass production since its inception long before the auto industry's short span. But a look ahead at the future possibilities can stagger the imagination far more than what has gone before.

Forefathers—It was in 1799 that Eli Whitney, more famous for his cotton gin, received a contract to build muskets for the Army. Though the parts were virtually hand built, every part was made to fit any other gun. This concept of interchangeability of parts was the first great step toward mass production, and in the nineteenth century, Samuel Colt is said to have first used the assembly line technique in the building of the legendary Colt revolver.

The endless belt conveyor undoubtedly numbers among its creators William Loudon, an Iowa farmer, who in 1867 built wooden monorails and wheeled carriers to get hay into his barn and manure out with less effort. In the 1870s, William Ewart, an Iowa farm machinery dealer, and James Dodge fostered the idea of the link-belt



chain for powering endless conveyors.

Evolution—At the turn of the century when the auto industry was getting under way, these principles were already rapidly becoming established and were ready for assimilation by the growing industry. Perhaps the first contribution to mass production on the part of the auto industry was brought about by Walter E. Flanders. Hired by Ford in 1906, he ripped the factory layout to pieces and reassembled it into a pattern that resulted in a smooth flow of work rather than departments based on the type of machine.

Flanders, too, among others, contributed the idea of extensive jig and fixture incorporation to make general purpose equipment special purpose equipment.

All Was Ready — Thus it was that quite early in its youth the auto industry was able to visualize production remarkably similar to auto assembling as we know it today. Most of the basic principles were there: Interchangeable parts, moving assembly lines, smooth work flow and special purpose equipment utilizing unskilled operators. Not too many basic changes



After the pushbutton, what? The automatic factory is years away, say the automakers, but already there are islands of automation in the auto plants and remote control is commonplace

have been incorporated since then.

One of the most significant is selective fitting. This was made possible through development of sensitive, quick and accurate inspection tools. Occurring about 1935, selective fitting made possible perfect fitting of parts within circumscribed tolerances of moderate laxity and did much to minimize the prohibitive "break-in" period required for previous cars.

Cost—Changes in the type of fabrication were made as requirements and cost dictated and as machines were improved. A good example is suspension parts which formerly were forgings and now are heavy pressings. Combined methods were evolved such as press-forging, and in 1932 Henry Krueger got a Ford contract for 12 machines to bore the cylinder block of the new V-8 automatically.

These machines were the product of originality, but also of evolution, and represent the direct progenitors of the automatic transfer machines boring blocks on engine lines throughout the industry today.

Automation—The pathway to automation is easy to discern and the wonder is that its advancement was not more rapid, occurring widely

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in the 1920s or before. For the accompanying pictures supplied by Ford Motor Co. clearly show that though production of automobiles in the past may seem "funny" like knickers or the flapper, auto production today compared with its genesis is hardly remarkable.

A major reason for the slow progress in auto production lies in the tremendous number of small companies bitterly competing for the rapidly expanding auto market during the early years. Only when they began to merge and combine their assets could they afford the tooling and layout costs required for mass production as we know it today.

Along the Way—The progress which has been made should not be minimized. It is also important to note that thousands of contributions to the basic principles sketched above have brought modern auto production to its current state of fruition. Synthetic enamel which could be dried rapidly by infrared rays, ultrasensitive limit switches and photoelectric cells, carbide tools and many other equally important developments have helped reduce time and costs in automobile manufacture.

But the roadsigns of research show many developments just ahead which promise to further and embellish the automaking tra-

dition of sensationalism in mass production. Perhaps none has captured the imagination so completely during the postwar period as the single word—plastics.

Poly-Magic—One of the questions most asked of auto engineers is, "When will my car have a plastic body?" The engineers admit quite frankly that they don't know and forward the question to the plastics makers who are not quite so reticent. Engineers at firms like Dow Chemical Co. believe that the next big area of plastic fabrication will be automobile bodies, possibly glass cloth impregnated with a water-base, polyvinyl resin.

"Our problem is to perfect machinery which will handle plastics as easily as we now handle sheet steel," says one plastics engineer. And in one of the Dow laboratories a new vacuum press hints at a solution to the problem.

The Answer?—On the bed of a shallow metal box, 4 by 6 feet, molding patterns are placed. A sheet of tough plastic is placed over the box and a heating element brings the sheet to a temperature of 350 degrees. The machine operator pulls a lever and the softened sheet is sucked down over the form, exactly filling every crevice and duplicating every feature.

The machine obviates the need for matched dies and heavy hy-

draulic or mechanical presses but leaves new problems of heating the mold and generating sufficient vacuum for large and intricate forms. And in the current state of development, most methods of fabricating reinforced plastic bodies require a great deal of hand work and are just not capable of high volume production.

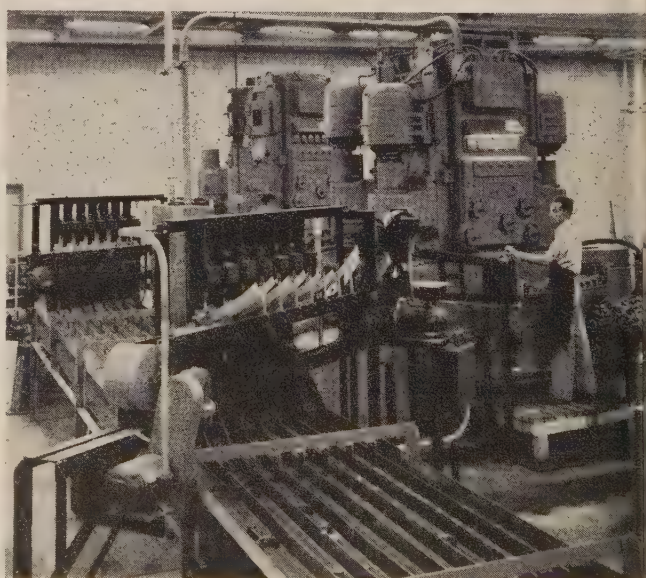
Competitive? — The ability of glass reinforced plastics to compete with steel for passenger-car body use, then, hinges on better fabrication techniques and equipment than have thus far been developed and engineers all over the country are hard at work on the problem. What's more, steelmakers are standing still technically. Steel formability and finish have improved steadily in the past and will continue to do so in the future. Thus, by the time plastics fabrication and equipment problems are solved, plastics probably will have a new problem of competing with steel on quality.

The Potential—Practical now in limited-production vehicles like the Kaiser and Chevrolet sport cars, plastic car bodies are a designer's dream, but a production man's nightmare. And the production men are the ones that will have to be sold.

One plastics engineer estimates that probably three years will



Ford made history in the spring of 1913 with a moving line for assembling flywheel magnetos



A 1953 approach to automation, this Ford machine grinds, weighs and classifies connecting rods

SKYSWEEPER

-ACCURATE TO THE **ND** DEGREE

This wonder weapon can detect an approaching enemy aircraft 15 miles (90 seconds) away and blast it out of the sky. The *Sky-sweeper* automatically gauges the speed and course of the oncoming target and fires proximity-fused shells to bring down the plane.

Precision-made New Departure ball bearings help give the *Sky-sweeper* its uncanny ability to detect and destroy. These instrument bearings are marvels of accuracy themselves. All component parts must pass countless inspections . . . meet the highest manufacturing standards in the industry.

In all applications, specify bearings that fight friction as efficiently as the *Sky-sweeper* fights enemy jets . . . specify New Departures!



NOTHING ROLLS LIKE A BALL



NEW DEPARTURE
BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT
Also Makers of the Famous New Departure Coaster Brake

required to solve the problems currently facing plastic mass production, and following that time a period of two or three years will be required for the automakers to test the material and tool up for production. So the outlook is for at least six to eight years passing before plastics gets more than its foot into the auto plant door.

Plastic Dies—The cousin of the plastic body, the plastic die, is assured of a quick growth in the very near future. Though most auto companies don't want their competitors to know their plans, they will admit off the record that they are working day and night in testing plastic dies for widespread use in the days just ahead.

Phenolics are being used in temporary dies and laminates in permanent dies. The dies can be made directly from the clay model of the automobile and will ultimately cut tooling time on bodies from more than a year to less than 3 months. Eliminated are the wooden and plaster intermediary steps which took months of time and required the services of skilled mechanics and patternmakers. When the master clay model is finished, the number of dies required are made from it and a completely plastic model can be made for future reference.

Life—Life of the plastic dies varies. In some cases more than 100,000 parts can be made from a die, but lengthening die life is a problem that is now top priority stuff on the engineering docket. Guesses are that the surface abrading will ultimately be retarded by impregnation of the die surface with a ceramic ferrochromium or carbide material.

One auto company reports that it is using 10 per cent plastic dies right now but the situation is very hush-hush because labor objects strenuously to plastic dies. Other firms are using some plastic dies and many are using Fiberglass laminated hammer molds, check blocks and body fixtures made of plastic.

Plastics Prognosis—So the trend is to plastic dies and in a hurry. The next few years should see plastic dies become widespread in auto manufacturing and the significance is tremendous. Aside from the saving in tooling time, the tooling cost

will be cut in half. To a firm like Chrysler, which spent over \$50 million in tooling last year, the saving will be tremendous and should be reflected in lower car cost.

Wonder Metals—Are cars of the future going to have titanium frames and magnesium brake hubs? Auto engineers will predict that they won't, but there is a definite trend toward more light metals in auto construction.

The big factors in the trend to light metals are weight and price, with price getting the overwhelming nod. The Chrysler now utilizes four magnesium parts which were subjected to three years of operation on test cars before they were accepted, and 22 aluminum parts are currently used as well. Most of the parts are extrusions or die castings and it is this method of manufacture which permitted them to make the price grade. In fact, if the part cannot be fabricated by one of these methods, it has little chance of appearing on an automobile. Surface wear characteristics make such materials inapplicable in some instances, and improved anodizing techniques can be expected.

As diecasting, permanent mold casting and extrusion techniques continue to improve, more and more parts of aluminum and magnesium can be expected to appear. But by the same price token, a metal like titanium which sells for about \$20-\$25 per pound in usable forms compared with 30 cents for aluminum and about 6 cents for steel must do some radical dropping in price before it can enter the picture in any

but extremely small quantity applications.

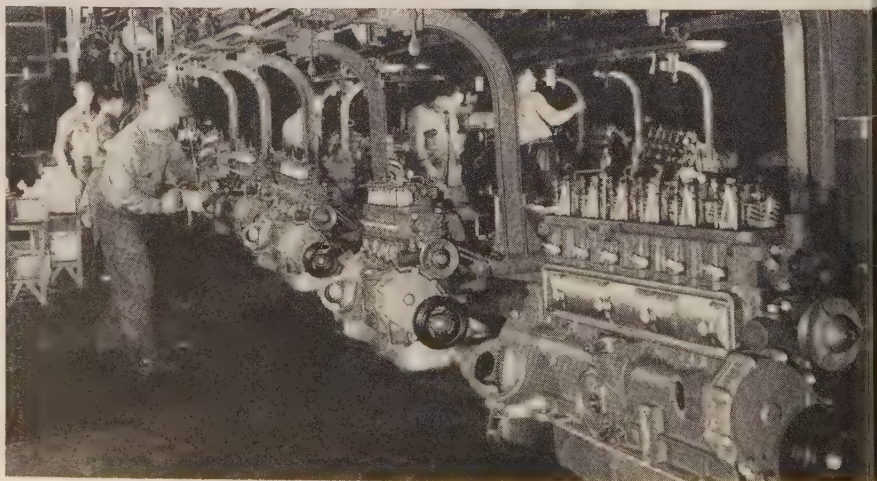
Ferrous Metals—A current trend in the industry is a swing to use of more pearlitic malleable. It has properties of high tensile and yield strength, and the price is reasonable. For the time being the chief use of nodular iron seems to be in crankshafts and possibly camshafts and valves by some manufacturers.

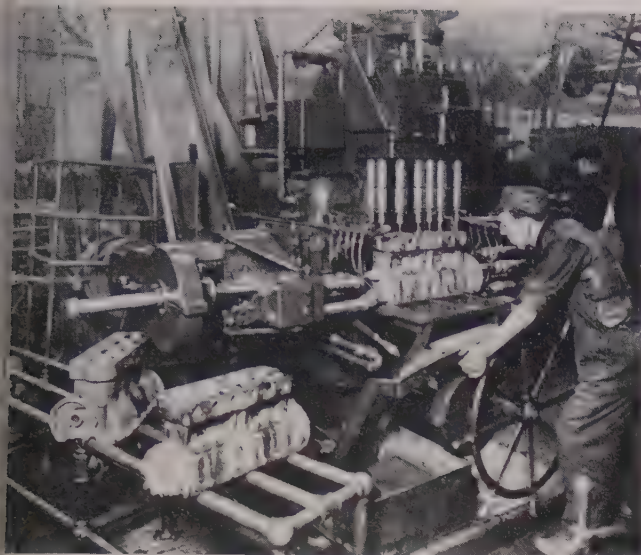
In wrought ferrous parts, the trend is to carbon and away from alloy materials. The recent scarcity of alloying materials is cited by one auto manufacturer as fostering research in more rigidly controlled heat treating which now minimizes the use of alloy materials. Flame and induction hardening applications are increasing and permit the replacement with low carbon material.

Longer Life — Axle shafts so treated give twice the endurance limit and permit a reduction in size. Steering knuckles are also returning to carbon steels.

Another item to suffer is boron steel. One firm reports applications of the material have dropped 30 per cent in the last three months. Cited in the reduction is the fact that though boron steels give a higher level of hardenability in many applications the increased hardenability is not required and the additional price of boron steels makes their use inadvisable. One gear and axle manufacturer is reported using boron steels for ring gears and pinions with excellent results, however, and continued use of the material in this and similar applications seems assured.

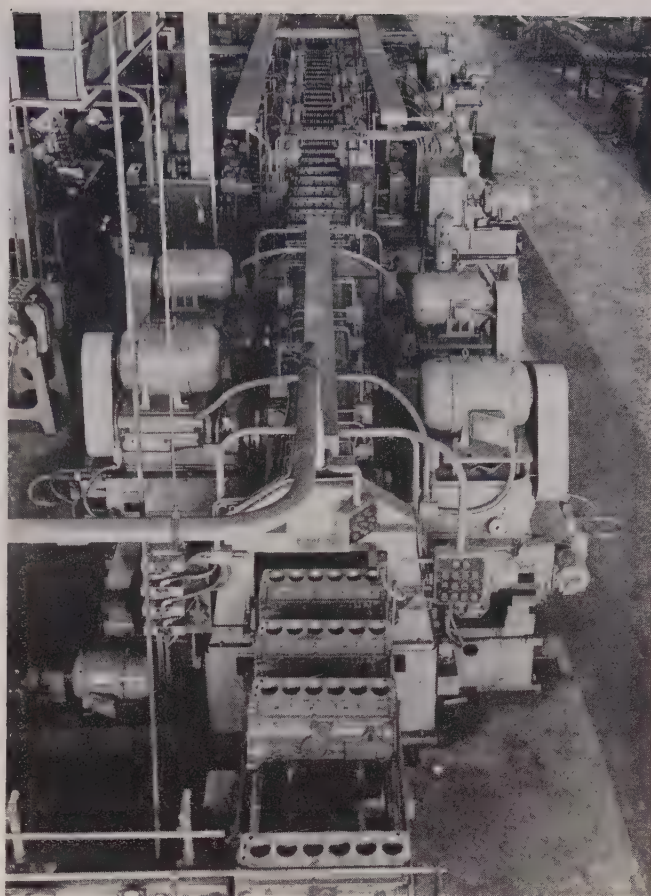
Materials handling improvements have brought more speed, less backache into auto manufacture





FROM THIS machine, simultaneously drilling three faces on a Model-T block in 1913

TO THIS modern transfer machine seems a big step; automakers see bigger ones ahead



Design Governs Materials — Looking over the materials picture, an important consideration is design. The high degree of overlap in the Ford crankshaft, for example, lends itself beautifully to the properties of nodular iron whereas the crankshaft designs of many other manufacturers must be made of steel to stand up. If motor design changes radically, other materials not now in common usage may be required.

But the converse is also true. If materials can't compete on a cost basis they don't stand a chance of adoption by the automakers and design will be altered. So design and cost are the two factors that hold the key to the materials in your car of the future.

The Automatic Factory—Though automation has progressed and will continue to progress, most auto production men feel that the automatic factory is unlikely. As one expressed it, "Replacing a \$4000 a year worker with a \$50,000 machine is not economy."

So automation for the sake of automation alone has no place in the auto industry. But automation

which saves time, manpower and part rejections due to human error has a bright future in the auto plant of tomorrow. There is no question that new plants will have a greater percentage of automatic operations, but the evolution of the automatic factory seems remote.

How Far?—Eminent among automation fizzles is the installation which requires prohibitive maintenance. Also tending to limit automation are equipment applications so specialized that amortization becomes prohibitive. Operating on these premises, many auto engineers see a return to production in a sense as it was some years ago.

Required under this concept are tools of greater flexibility and of a more general-purpose type which can be modified at a comparatively low cost to extend their life over a normal amortization period. Coupled with this equipment would be relatively standard automation links which could be moved anywhere in the factory much as a section of roller conveyor is today.

Not Far Enough—But countering this argument are those who say that automation has not gone

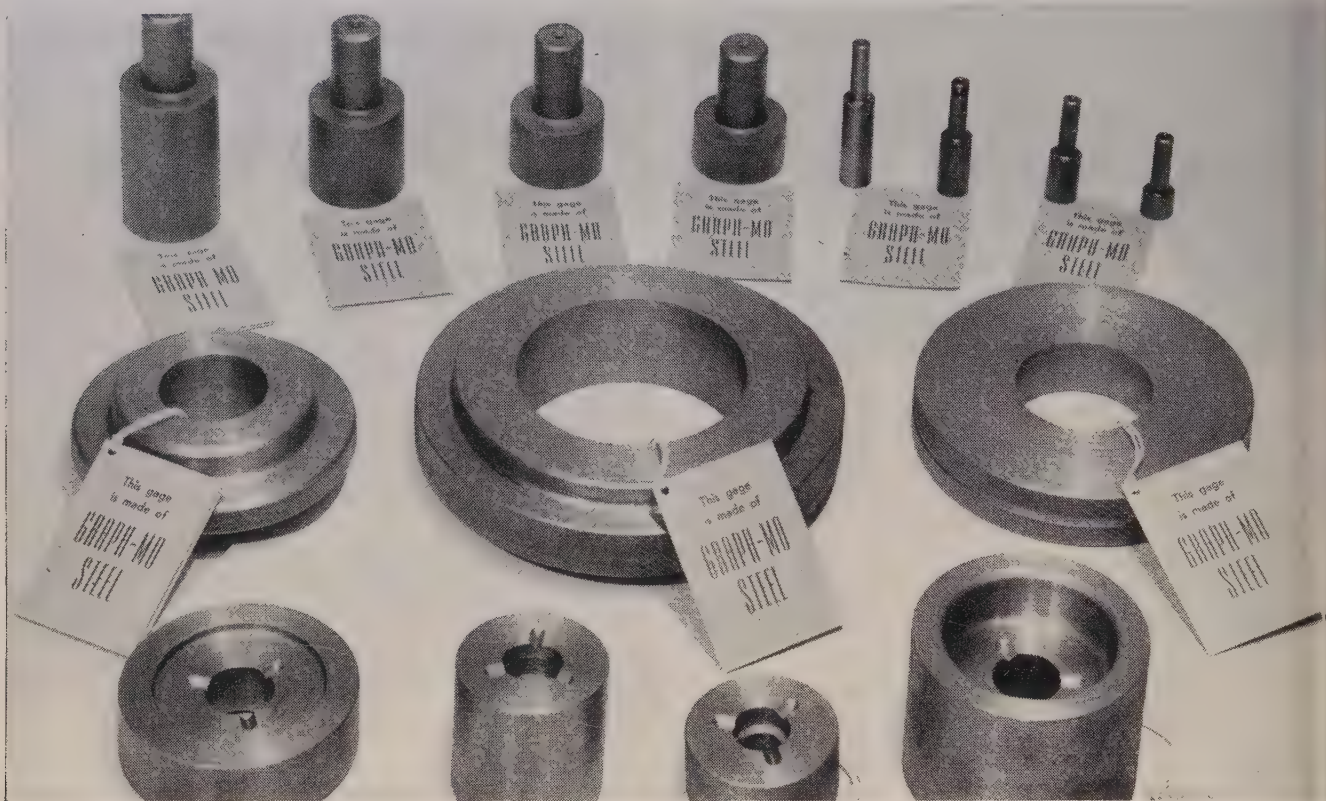
far enough. If equipment becomes much more specialized, they reason, efficiency will go on up and the reduced cost will more than pay for the accelerated amortization. To this group the automatic factory looms as a definite possibility of the somewhat distant future.

The next area, most engineers agree, where there will be marked progress toward more automaticity lies in moving equipment. The machinery would go down an assembly line assembling parts automatically in an operation now usually done by individual employees working with air tools. A machine at the DeSoto engine plant is a good example of the trend. It moves along with the block to tighten the bearing caps.

Significant—And so the battles rage. The most significant thing about attempting to determine trends in the auto industry is the variety of opinion. The automakers are men of ideas just as were their forebears in the auto industry.

The future of the auto industry is made brighter with the sparks of ideas in friction one with the other.

Switch to Graph-Mo® ends heat-treating problem, increases gage blank sales!



Graph-Mo steel gage blanks manufactured by HURON MACHINE PRODUCTS, Dearborn, Michigan

HURON Machine Products was having trouble heat-treating the oil-hardening tool steels it used for making gage blanks. Poor response to heat-treatment was causing cracks in the blanks.

Looking for an answer to the problem, Huron switched to Graph-Mo® steel, a special graphitic tool steel manufactured by the Timken Company.

Here's what happened when Graph-Mo steel was used:

Because Graph-Mo responds uniformly to heat-treatment, the cracking problem was eliminated. But that's not all.

Because Graph-Mo machines faster, machining time was cut, tool life lengthened.

And in addition to cutting production costs, Graph-Mo has helped Huron increase its sales. H. E. Lindemann, Huron president reports: "... the acceptability of Graph-

Mo by gage users has been an important factor in our company's increased sales."

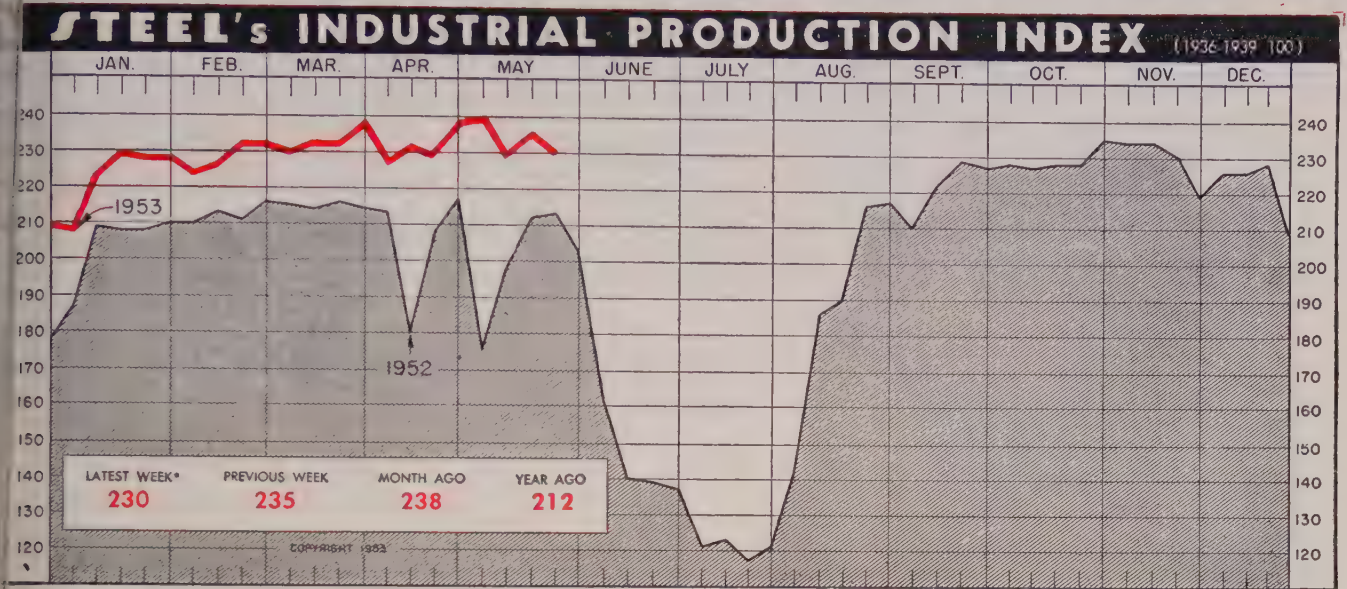
The difference in Graph-Mo steel and other gage steels can even be seen by the naked eye. The tiny, scattered parallel marks barely visible on the surface of a polished piece of Graph-Mo steel indicate the presence of free graphite in the steel's structure. This graphite, together with diamond-hard carbides, enables Graph-Mo to outwear other tool steels an average of 3 to 1, according to reports from dozens of users.

You can always tell Graph-Mo by its "graphitic look". This built-in trade-mark can't be duplicated in other steels. The next time you buy gages look for the "graphitic look" as well as the tag reading "this gage is made of Graph-Mo steel". The Timken Roller Bearing Company, Steel & Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended May 23

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Watch the machine tool industry for tip-offs on near-future industrial activity. Civilian orders for tools increase as defense needs decline. Industrial production index slips

KEEP AN EYE ON the machine tool industry when forecasting the general business conditions your company may soon face.

Machine tool orders often disclose future trends in the nation's industrial velocity. The volume of tool orders may show how manufacturers are preparing to increase output, lower costs with new equipment or coast along for the most part with the equipment they already have. But machine tool orders should be watched carefully; they can deceive you.

Deception?—Such a deception might result from a cursory glance at the current decline in machine tool orders. The National Machine Tool Builders' Association's index of new orders in April dropped to 277 per cent of the 1945-1947 average, compared with 323.3 per cent in March and 293.5 per cent in April, 1952. The association estimates that toolbuilders on May 1 had 8.1 months of work ahead, compared with 8.5 months on Apr. 1 and 14.8 months of work lined up on May 1, 1952.

Today's decline in tool orders doesn't necessarily mean rough sledding days for the metalworking industry or even for the machine

tool industry, for that matter. The reason for the decline is the lag in defense orders. For more than two years orders for machine tools have declined almost steadily as defense planners merely rounded out their already instituted programs. At present the new administration is restudying defense needs and tool orders may rise again when new mobilization plans crystallize.

The drop in the amount of work ahead for toolbuilders is also a deceptive barometer. Production capacity of the industry is today about 50 per cent over a year ago; that is part of the reason for the drop in backlogs to 8.5 months from 14.8 months during the year ended May 1, 1952.

Civilian orders also are taking up much of the slack left by the drop in defense work. Many machine tool builders are reporting a steady increase in civilian orders and say they are preparing for more. So, civilian manufacturers may be hoping to keep their production high, or even increase it some more, during the months following the normal summer decline.

Output Wavers—The nation's industrial production is threatening to decline under the current levels

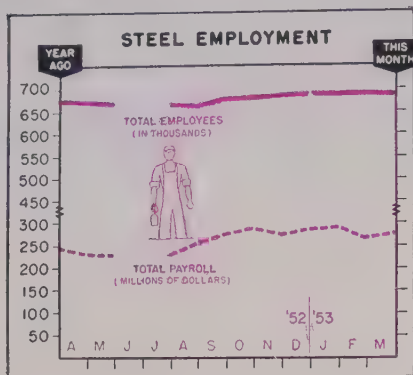
as labor troubles crimp the automotive industry. STEEL's production index in the week ended May 23 fell 5 points to 230 per cent of the 1936-1939 average when automotive operations declined to the lowest level since mid-March. Steel production remained steady, but freight car loadings—mirroring the automotive tie-up—inched downward. Electricity production continued its seasonal decline in the week ended May 23.

Steel Production Strong . . .

Steel production is continuing near capacity levels as producers rush to fill their many new orders. The American Iron & Steel Institute estimates that 2,268,000 net tons of steel for ingots and castings were produced in the week ended May 30, compared with a capacity rating of 2,254,459 tons on Jan. 1, 1953.

Auto Output Slashed . . .

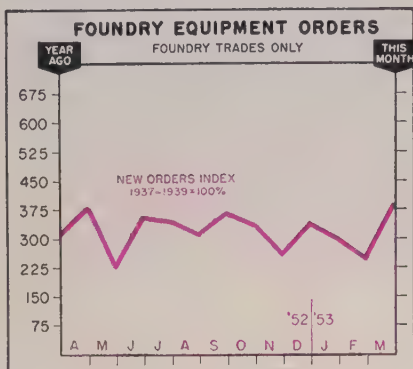
Suppliers' strikes are demolishing automotive schedules with tornado velocity. Ford Motor Co. in the week ended May 23 had closed 13 of its 15 U. S. assembly plants as a result of its month-long strike at its Canton, O., forge shop. Slipping fast is production of Chrysler Corp., while Studebaker Corp. is preparing to go on a one-shift



Steel Employment, Payrolls

	in Thousands		in Millions	
	1953	1952	1953	1952
Jan.	684	672	\$253.4	\$232.2
Feb.	685	674	261.3	231.9
Mar.	683	672	265.9	242.7
Apr. ....	...	670	...	225.6
May ....	...	662	...	223.1
June ....	...	...	...	...
July ....	...	...	...	...
Aug. ....	...	660	...	250.4
Sept. ....	...	674	...	269.4
Oct. ....	...	677	...	2-2.9
Nov. ....	...	680	...	269.7
Dec. ....	...	684	...	250.0

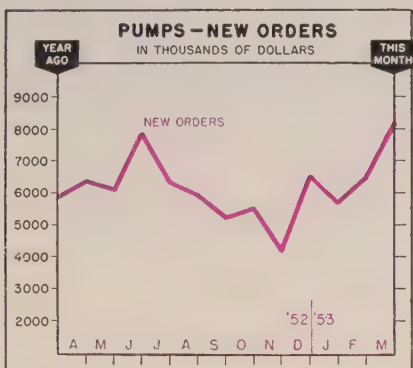
*Not available because of steel strike.
American Iron & Steel Institute.



Foundry Equipment Orders

	Index (1935-1939=100)		Value, Thousands	
	1953	1952	1953	1952
Jan.	301.0	404.5	\$1,379	\$1,862
Feb.	257.3	200.4	1,179	922
Mar.	396.7	310.0	1,818	1,427
Apr. ....	...	385.1	...	1,773
May ....	...	225.2	...	1,037
June ....	...	353.8	...	1,629
July ....	...	243.9	...	1,583
Aug. ....	...	311.6	...	1,434
Sept. ....	...	365.9	...	1,655
Oct. ....	...	335.8	...	1,538
Nov. ....	...	258.1	...	1,183
Dec. ....	...	343.3	...	1,573

Foundry Equipment Mfrs. Assn.

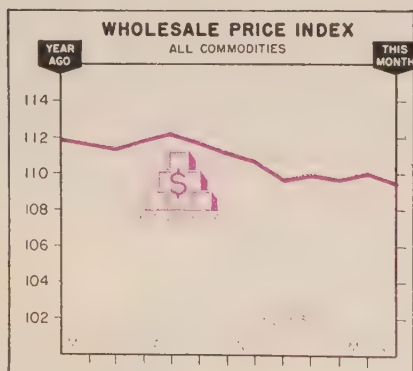


Pumps, New Orders

	In Thousands of Dollars		
	1953	1952	1951
Jan.	5,752	5,517	6,477
Feb.	6,521	6,020	6,480
Mar.	8,255	5,925	7,654
Apr. ....	...	6,354	7,583
May ....	...	6,140	6,371
June ....	...	7,957	6,852
July ....	...	6,299	8,358
Aug. ....	...	5,921	5,911
Sept. ....	...	5,258	6,552
Oct. ....	...	5,534	6,506
Nov. ....	...	4,130	5,908
Dec. ....	...	6,575	5,553

Total 71,630 80,175

Hydraulic Institute



Wholesale Price Index

	(1947-1949=100)		
	1953	1952	1951
Jan.	109.9	113.0	115.0
Feb.	109.6	112.6	116.5
Mar.	110.0	112.3	116.5
Apr.	109.4	111.8	116.3
May ....	...	111.6	115.9
June ....	...	111.3	115.1
July ....	...	111.8	114.2
Aug. ....	...	112.2	113.7
Sept.	111.7	113.4
Oct.	111.1	113.7
Nov.	110.7	113.6
Dec.	109.6	113.5

U. S. Bureau of Labor Statistics

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction May 25
Durable Goods May 4
Employ., Metalwk. May 4
Fab. Struc. Steel... May 18
Freight Cars May 11
Furnaces, Indus. ... May 25
Gear Sales May 18
Gray Iron Castings.. Apr. 20

Indus. Production.. Apr. 27
Ironers Apr. 13
Machine Tools Apr. 27
Malleable Castings.. Apr. 20
Prices, Consumer .. May 4
Radio, TV May 25
Ranges, Elec. Apr. 13
Ranges, Gas May 18

Refrigerators May 18
Steel Castings Apr. 20
Steel Forgings Apr. 20
Steel Shipments ... May 4
Vacuum Cleaners ... May 11
Wages, Metalwk. ... Apr. 27
Washers May 11
Water Heaters May 11

workweek. Nash has slipped to lower daily rates, while Willys is virtually blacked out. Truck producers—with Studebaker, International Harvester, Diamond T, Willys hit by the Warner Gear Workers strike, and Ford by the Cantor walkout—are backtracking.

Combined U. S. and Canadian production in the week ended May 23 declined 15,195 units to 162,111 passenger cars and trucks, the lowest weekly total since the week ended Mar. 14, says *Ward's Automotive Reports*. STEEL estimates that 98,000 passenger cars and trucks were produced in the week ended May 30.

Sweeping Up the Sales ...

The appliance boom is continuing throughout the nation, although some manufacturers are finding their sales of metal household goods are tapering off somewhat. The case in point is the vacuum cleaner industry. The Vacuum Cleaner Manufacturers' Association says that factory sales of standard-size household vacuum cleaners in April declined 18.4 per cent from March to 268,548 units, but still totaled a good 23.7 per cent above April, 1952. March, 1953, with sales totaling 329,294 units, was the top month since October, 1952, with 331,445 vacuum cleaners.

Production Peak in June ...

Industry may turn June into the highest production month of 1953 as factories schedule all shipments possible before the July vacation shutdowns. So says the National Association of Purchasing Agents Business Survey Committee which reports that vacation shutdowns of plants this year are expected to be more prevalent and longer.

The committee says that over-all industrial activity remained high in May, but new orders showed a tendency to ease off—although not alarmingly. The trend toward higher payrolls apparently reached its peak as overtime was reduced all along the line. Several areas are still plagued by the shortage of skilled workers, but others report an easing up. Employment managers are watching closely the steel wage negotiations now underway. Industrial buyers are still wary

BAROMETERS OF BUSINESS

INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Output (per cent of capacity) ²	100.0	100.5	102.0
Electric Power Distributed (million kw/hr).....	7850 ¹	7,959	7,146
Bituminous Coal Output (daily av.—1000 tons)...	1,522	1,469	1,386
Petroleum Production (daily av.—1000 bbl).....	6,370 ¹	6,359	N.a. ⁸
Construction Volume (ENR—millions).....	\$257.6	\$282.2	\$231.9
Automobile, Truck Output (Ward's—units).....	162,110	177,305	127,751

TRADE

Freight Car Loadings (unit—1000 cars).....	760 ¹	780	762
Business Failures (Dun & Bradstreet, number)...	170 ¹	193	145
Currency in Circulation (millions) ³	\$29,795	\$29,845	\$28,483
Dept. Store Sales (changes from year ago) ³	+7%	+9%	+5%

FINANCE

Bank Clearings (Dun & Bradstreet, millions)....	\$18,302	\$16,280	\$17,375
Federal Gross Debt (billions).....	\$265.8	\$265.7	\$259.1
Bond Volume, NYSE (millions).....	\$14.8	\$14.5	\$15.6
Stocks Sales, NYSE (thousands of shares).....	6,834	5,631	5,947
Loans and Investments (billions) ⁴	\$75.8	\$76.2	\$73.2
United States Gov't. Obligations Held (billions) ⁴	\$29.0	\$29.2	\$31.4

PRICES

STEEL's Weighted Finished Steel Price Index ⁵	182.82	181.88	171.92
STEEL's Nonferrous Metal Price Index ⁶	223.3	221.8	232.4
All Commodities ⁷	109.9	109.9	111.8
All Commodities Other Than Farm and Foods ⁷ ..	113.6	113.4	113.3

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100. ⁸Not available.

of long-range purchases and are restricting themselves within a 30-60 range, for the most part. Commodity prices—except for steel extras—showed a tendency to level out or decline in May. Questioned on the future of prices, 57 per cent of surveyed members expected prices to remain about the same for several months, while 37 per cent saw a gradual downtrend for the rest of the year, and only 8 per cent of the members expected prices to increase.

Downhill for Locomotives ...

As railroads round out their dieselization programs, the number of locomotives on order are down to less than half the unfilled orders of a year ago. The Association of American Railroads says that Class 1 railroads on May 1 had 869 locomotives ordered, of which 832 were for diesel-electric units. These railroads at the same date in 1952 had orders in for 1768 locomotives, 1730 diesel-electric units.

Fewer Doors Closed ...

Business failures, on the uptrend in the three preceding months, reversed direction by declining in April. Failures in April totaled 693 enterprises, 6 per cent lower than

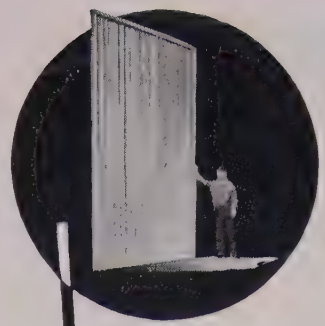
in the previous month and 11 per cent under April, 1952, says Dun & Bradstreet Inc. In the first four months of 1953, 2770 businesses closed their doors, only 15 firms less than in the same months of 1952.

Employment Increases Again ...

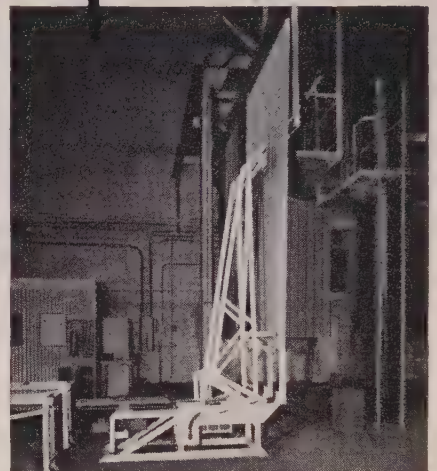
Employment in the metalworking industry continued to inch up in April to a level well over a year earlier. The Bureau of Labor Statistics says that employment in the primary metals industry in April reached 1,343,900 persons, or 47,400 above a year earlier. Producers of fabricated metal products increased their manpower to 1,160,400 employees, or 120,100 more persons than a year earlier.

Trends Fore and Aft ...

The cost-of-living, as measured by the Labor department, rose for the second consecutive month in April ... Wholesale prices in April dropped below the February level ... Department store sales are now running about 7 per cent in dollar volume over a year ago ... Shipments of metal cans in March rose 5 per cent over March, 1952 ... Bank clearings are rising about 5 per cent over clearings of this time last year.



**You Don't Toss
These 500 Pound
Doors Around
One-Handed**



Ingenious Fully Automatic Material Handling System Moves Bulky Steel Doors Safely and Efficiently Through a Production Cycle.

Each door, held in a frame by magnets, is raised from a horizontal to a vertical position then set on to an overhead conveyor and released to travel through various production processes. Finally it is removed from the conveyor and returned to the original, horizontal position—a finished product.

Every phase of the handling cycle is automatic and synchronized with every other movement.

The Door Handling Installation may not fit your material handling problems but whatever their nature the Allied Engineering Staff can provide solutions; consult us.

Allied Manufacturers Various Types of Conveyors



Floor Conveyor

Overhead Conveyor



ALLIED

STEEL AND CONVEYORS, INC.

17313 HEALY, DETROIT 12, MICH.

more tons per
dressing from

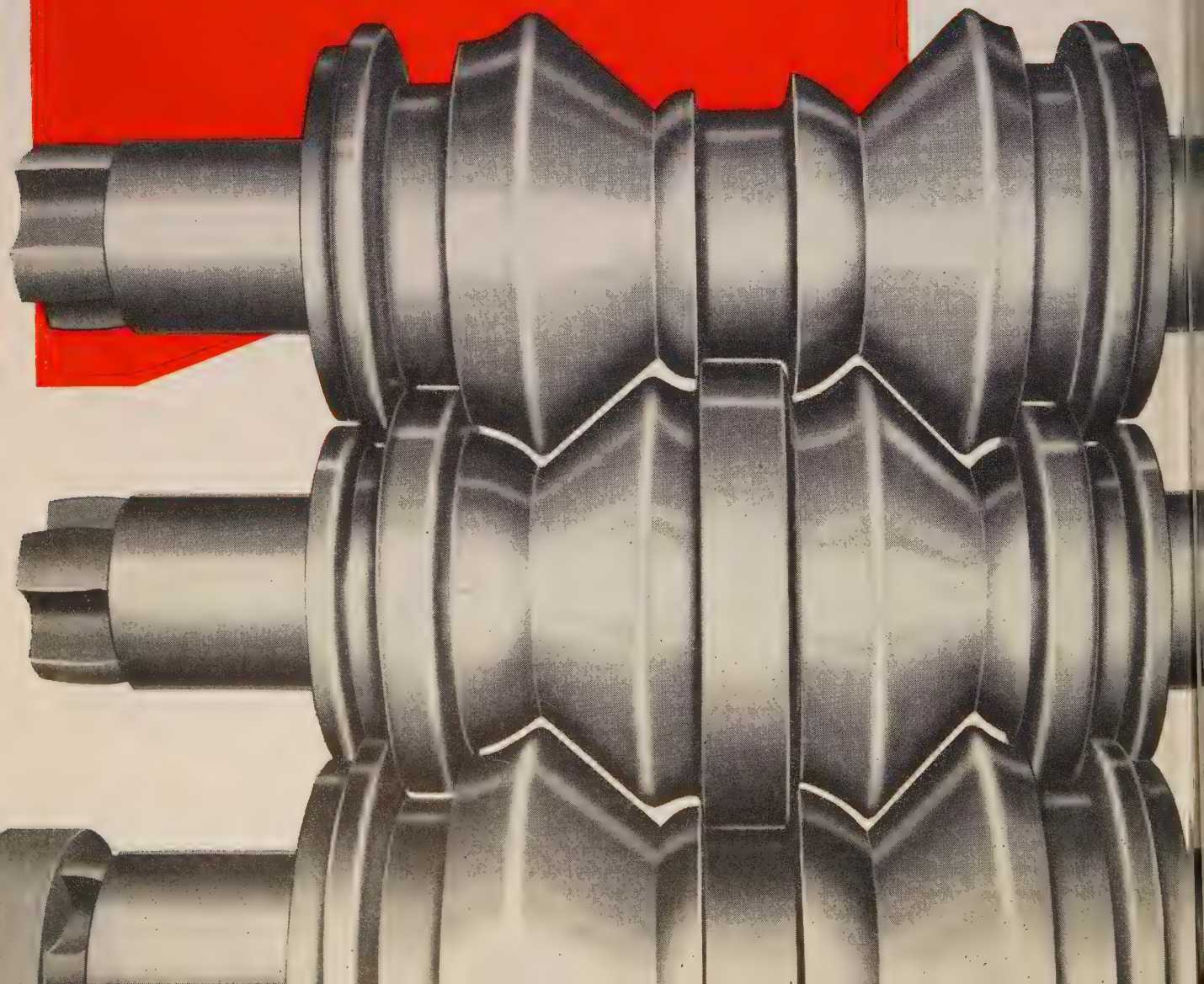
Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA • AND SPRINGFIELD, OHIO

Carbon Steel Rolls
Ohioloy Rolls
Ohioloy "K" Rolls
Holl-O-Cast Rolls
Chilled Iron Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls
Nioloy Rolls
Flintuff Rolls
Ohio Double-Pour

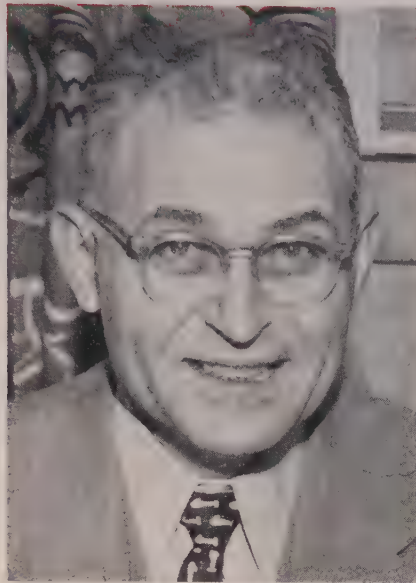


Men of Industry



ROBERT F. SMITH

... new president, Indiana Steel Products



JOHN L. KEATING

... Cooper Alloy Foundry production mgr.



R. PAUL TOEPPEN

... James H. Knapp Co. v. p.

Robert F. Smith, vice president, Indiana Steel Products Co., Valparaiso, Ind., and acting chief executive of the company for the last several months, was elected president and a member of the board of directors. A veteran of 16 years' service with the company, he had served as vice president since 1948 and as general manager since May, 1949. Other appointments include Ivan A. Dickey, promoted to sales manager, and P. M. Wheeler named midwestern regional sales manager with offices in Chicago. John H. Bouwmeester, vice president-manufacturing, was elected a director and Anthony Astrologos treasurer.

James J. Hallinan, former assistant general sales manager, Chicago midwestern division, was appointed general sales manager of the north-eastern division, Kaiser-Frazer Corp., with headquarters in New York. He succeeds Frank J. Brosnan, named general sales manager of the central division at the Willow Run, Mich., main plant.

David K. Tomer was appointed to the headquarters staff of Blaw-Knox Co., Pittsburgh, as manager of the control section.

Ralph W. Lund was named vice president and director of the abrasives division of Mortensen Industrial Supply Co., Milwaukee.

Cooper Alloy Foundry Co., Hillside, N. J., appointed John L. Keating production manager, Morton L. Katz chief shell mold engineer, and Anthony A. Miano standards supervisor in the stainless engineering and machine works division. Mr. Keating previously served as a senior consulting engineer with W. W. Slocum & Co. and was production manager for the five nonferrous foundries of Bendix Aviation Corp. during the war years.

A newly created post of director of manufacturing services of Borg-Warner Corp., Chicago, will be occupied by Frank W. Rickard, previously general superintendent in charge of production at the Chrysler Corp. tank engine plant in New Orleans.

Joel Hunter, formerly vice president in charge of finance, was elected a director and executive vice president of Crucible Steel Co. of America, New York.

Jones & Laughlin Steel Corp., Pittsburgh, appointed Walter H. Lewis assistant vice president-production and William P. Getty assistant vice president-steel works.

John H. Durant was made business manager, research division, National Research Corp., Cambridge, Mass.

R. Paul Toeppen was elected vice president of James H. Knapp Co., Los Angeles. He has served for the last ten months as general manager. Prior to joining Knapp, he operated Toeppen Co., engineering consultant, serving the aircraft industry during the war as a production engineering consultant.

Cleveland-Cliffs Iron Co., Cleveland, elected as president Walter A. Sterling. He also becomes a director of the company. Alexander C. Brown, who at the April meeting had been elected president and chairman of the board, continues as chairman and chief executive officer, and Edward B. Greene as honorary chairman. Since 1950, Mr. Sterling has been vice president in charge of mining operations with headquarters in Cleveland.

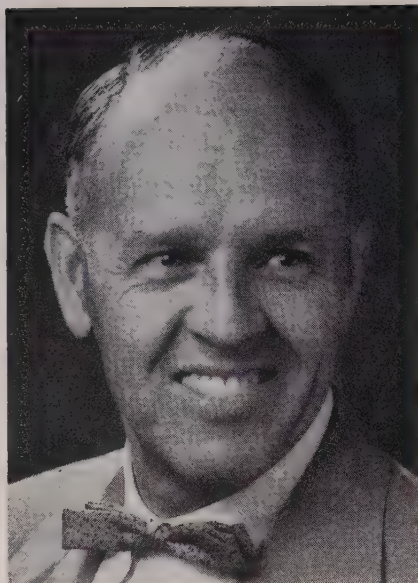
Chandler & Price Co., Cleveland, elected J. W. Kirkpatrick vice president and sales manager, F. D. McLaughlin vice president and works manager, and Walter P. Moak secretary.

James W. Ramsey was made assistant general traffic manager, American Steel & Wire Division, Cleveland, U. S. Steel Corp.

Harold C. Lumb was appointed general counsel for Republic Steel Corp., Cleveland, to succeed T. F.



HUGH F. COLVIN



ROBERT L. SMALLMAN

... Consolidated Engineering v. p.'s

Patton, now assistant president and first vice president of the company.

Hugh F. Colvin was elevated to the position of vice president and general manager, Consolidated Engineering Corp., Pasadena, Calif. Robert L. Smallman was elected vice president in charge of sales and Victor Pollock treasurer. Mr. Colvin, who joined the firm in 1947, became vice president and treasurer in January, 1953.

Hansell-Elcock Co., Chicago, elected George R. Winter a director. He is also executive vice president.

E. C. Warrick, chief engineer, Delta Mfg. Division, Rockwell Mfg. Co., Pittsburgh, was promoted to chief engineer of the firm's Power Tool Engineering Division. He succeeds Paul E. Butzin, who continues to serve as consultant for the division.

Clarke Tryon was made sales manager, Ramset Fasteners Inc., Cleveland, division of Olin Industries Inc. Jason H. Radding becomes Ramset merchandising manager for metropolitan New York.

Ivan L. Coulter was appointed comptroller and assistant treasurer, Scovill Mfg. Co., Waterbury, Conn., to succeed the late William F. Burke.

A. John Macdonald was made general manager of Hanna Furnace Corp.'s Buffalo plant to succeed Charles H. Heist, retiring. Mr. Macdonald has been assistant general

manager there since 1948. Earl C. Evans was appointed general superintendent.

Edward W. Forth, since 1952 quality manager of American Machine & Foundry Co.'s Buffalo division, was made assistant plant superintendent of De Walt Inc., Lancaster, Pa., AMF subsidiary.

Inet Inc., Los Angeles, appointed Bruce H. Atwater sales manager. He formerly was vice president-sales, Pacific Airmotive Corp.

Donald M. Laflin was named vice president-sales and Edgar L. McFerren vice president-engineering at Giddings & Lewis Machine Tool



DONALD M. LAFLIN

Co., Fond du Lac, Wis. Milton H. Nichols, former northeastern district sales engineer, was made export sales manager located in Paris. David F. Robinson, former vice president-sales manager at Rudolph Machinery Co. Inc., succeeds M. H. Nichols in the northeastern district. Others appointments include Ralph A. Breitung as secretary-treasurer, Morton R. Swift controller, assistant secretary-treasurer, Fred C. Freund works manager, William H. Sorenson assistant to the president and Harry C. Soukup superintendent.

G. W. Bulmer was elected vice president in charge of sales, Northwestern Steel & Wire Co., Sterling, Ill. He formerly was sales manager for merchant trade products.

Builders Structural Steel Corp., Cleveland, appointed Elmer H. Shafer manager of its steel warehouse division. His appointment permits Vice President R. H. Thompson to devote full time to sales promotion. Mr. Shafer has been manager of sheet and strip sales division of Joseph T. Ryerson & Son's Cleveland steel warehouse since 1946.

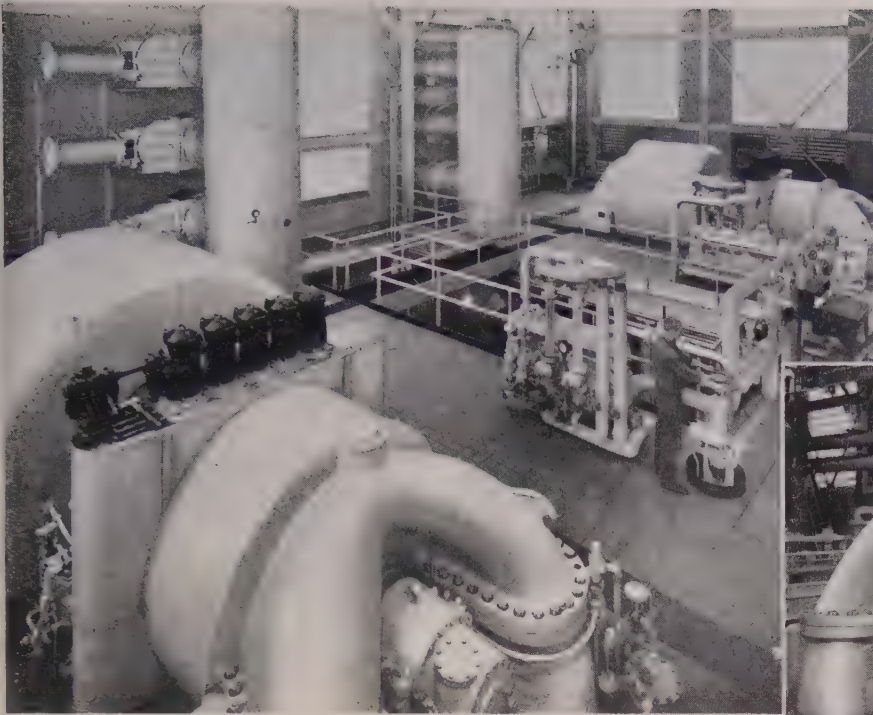
Sherman W. Richardson is industrial relations manager, Oliver Iron & Steel Corp., Pittsburgh.

James A. Lawson was named eastern zone manager, Plymouth Motor Corp., Detroit. With headquarters in the home office, he will supervise field operations in Atlanta, Detroit



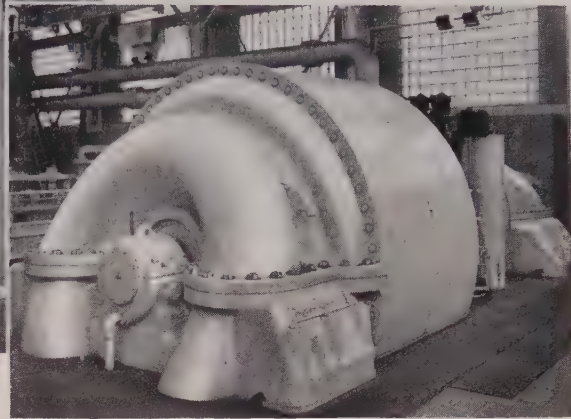
EDGAR L. McFERREN

... new v. p.'s of Giddings & Lewis



General view of blast furnace blowing room, showing the two 100,000 cfm I-R Turbo-Blowers and 11,500 hp I-R Steam Turbines.

Blower end of one of the 100,000 cfm blast furnace Turbo-Blowers.



COMPLETE I-R BLOWER PLANT

helps another large steel mill
maintain continuous high production

Like other leading steel producers throughout the country, this large Western Pennsylvania steel mill has placed full confidence in Ingersoll-Rand equipment for the vital blower plant.

Here confidence means more than peace of mind. It means continuous, uninterrupted production of our most essential metal. For any failure of the turbo-blower equipment would mean a costly shut-down of the blast furnace—and a serious loss of plant output.

That's one important reason why Ingersoll-Rand has long been a major supplier to the steel industry—where *proved dependability* of equipment is absolutely essential. An Ingersoll-Rand engineer will be glad to discuss your blower, compressor, condenser or pump problems with you. Call on him whenever he can help you

*Ingersoll-Rand Equipment
installed at this*

Western Pennsylvania Steel Mill

- ▶ Two I-R Blast Furnace Turbo-Blowers, each driven by an 11,500 hp I-R Steam Turbine and compressing 100,000 cfm of air to 30 lb.
- ▶ Two I-R Surface Condensers serving the blower turbines. Two-pass, vertically divided, each with 10,000 sq. ft. of surface.
- ▶ Two I-R Vertical Condensate Pumps for the surface condensers, returning water to boiler recycle.
- ▶ Two I-R Steam-Jet Air Ejectors serving the surface condensers.
- ▶ Two I-R Turbo-Blowers for compressing 15,000 cfm of coke oven gas to 10 lb. Each driven by a 700 hp motor.
- ▶ Three I-R Four-Corner PRE Compressors for boosting coke oven gas to 25 lb. Each driven by a 1250 hp motor.
- ▶ Two I-R Single Stage ES Dry Vacuum Pumps, 100 hp each, for the desulfurizing unit.

*Also many small
I-R Centrifugal Pumps
in the coke plant.*

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N Y

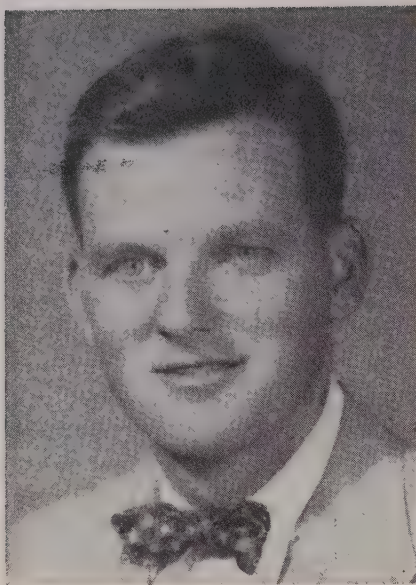


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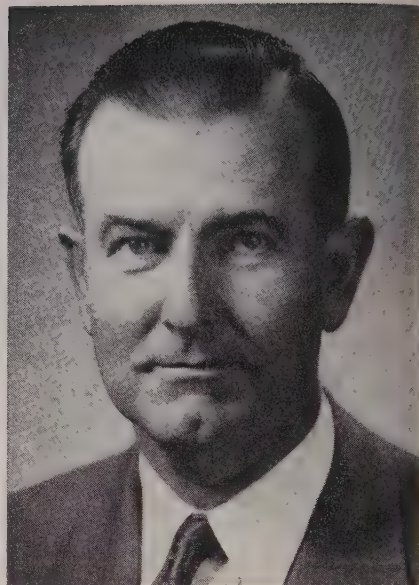
COMPRESSORS • TURBO BLOWERS • CENTRIFUGAL PUMPS • VACUUM EQUIPMENT • ROCK DRILLS • AIR TOOLS



THOMAS T. KLING
... Lodge & Shipley v. p.



JAMES A. ROUSMANIERE
... gen. mgr., Taylor-Wharton div.



THORN L. MAYES
... heads a new GE motor dept.

New York and Philadelphia regions.

Thomas T. Kling was elected vice president and director, **Lodge & Shipley Co.**, Cincinnati. He continues as works manager.

Harry P. Smith Jr. was appointed executive vice president and general manager of operations at **Hufford Machine Works Inc.**, Segundo, Calif. He started with Hufford at its inception in 1942, advancing to the position of sales manager. Sales duties continue under his direction. **Walter G. Wheeler** was promoted from chief engineer to vice president in charge of engineering and production. **Kingsley Drone** succeeds as chief engineer.

Hooker Electrochemical Co., Niagara Falls, N. Y., announces that **Robert J. Entenman** joined the company as chemical engineer in the process study group and **William B. Corcoran Jr.** is a draftsman in the engineering department.

Frank F. Kolbe, president, **United Electric Coal Co.**, was elected to the board of directors of **Clark Equipment Co.**, Buchanan, Mich.

James A. Rousmaniere was appointed general manager of the cylinder division for **Taylor-Wharton Iron & Steel Co.**, Cincinnati. He was formerly in charge of all sales and advertising activities as related to the high pressure forged steel cylinders manufactured at Easton, Pa., plant.

Briggs Mfg. Co., plumbing ware division, Detroit, appointed **Arthur N. Hill** director of advertising and sales promotion succeeding **Robert F. Anthony**, resigned.

Robert G. Chelton was made sales manager, **Alkon Products Corp.**, New York. He had previous association with **Supreme Products Co.** and **Cleveland Twist Drill Co.**

Thomas S. Savoury was placed in charge of commodity sales for **Uskon** electrical radiant heating panels by the mechanical goods division, **United States Rubber Co.**, New York. **Chester M. Boehm** was appointed manager of sales policy for the division.

Edward W. Zollner is assistant factory manager of **Pfaudler Co.**, Rochester, N. Y.

Following establishment of a small integral motor department at Ft. Wayne, Ind., by **General Electric Co.**, **Thorn L. Mayes** was made general manager. Until the fall of 1953 only pilot line manufacturing will take place at the new location. Manufacturing operations remain temporarily at Lynn, Mass. The new department is responsible for standard and derivative lines of polyphase induction motors from 1 to 5 horsepower.

Ralph Ramer was appointed assistant to **L. J. Renner**, Chicago district manager, **Wickwire Spencer Steel Division**, Colorado Fuel & Iron Corp.

Martin M. Groark has taken up temporary headquarters in San Lorenzo on the east side of San Francisco bay as western district manager, **Inland Wire Products Co.**

Franz F. Kaiser is chief industrial engineer at Fairbanks, **Morse & Co.**, Chicago.

American Brake Shoe Co. appointed **John L. Goheen** as district manager for commercial research on the West Coast.

OBITUARIES...

Robert C. Weller, 68, owner of **Buffalo Welding Supply Co.**, Buffalo, died May 20.

Thomas O. Richards, 53, head of the executive engineering department, **Research Laboratories Divi-**

sion, **General Motors Corp.**, Detroit, died May 17.

Stewart A. Millar, 27, new products development engineer for **Detrex Corp.**, Detroit, died recently.

Arthur O. Hinz, 58, secretary-treasurer, **General Malleable Co.**, Wau-

kesha, Wis., died recently at Tucumari, N. Mex.

Ernest W. Krause, 76, founder and chairman, **Wheeling Machine Products Co.**, Wheeling, W. Va., also founder and president of **Krause Stamping & Mfg. Co.**, same city, died May 26.

STANDS UP UNDER THE SEVEREST FORMING

WICKWIRE

HARD DRAWN MB SPRING

WIRE



...Selected and Preferred for Zig-Zag Spring Wire in Automobile Seat and Back Cushions

Hard Drawn MB Spring Wire produced by Wickwire is used extensively as zig-zag spring wire in the construction of the latest ribbon type of spring units for automobile seat cushions.

Such wire demands the maximum degree of strength, ductility and uniformity in order to withstand the extremely severe deformation necessary in the fabrication of these springs. Painstaking care must be exercised in the selection of the right steel and in subsequent processing operations.

Wickwire Hard Drawn MB Spring Wire measures up in every way to these exacting demands because every step of its production, starting in our own open hearth furnaces, is under constant control, subject to uncompromising testing and inspection.

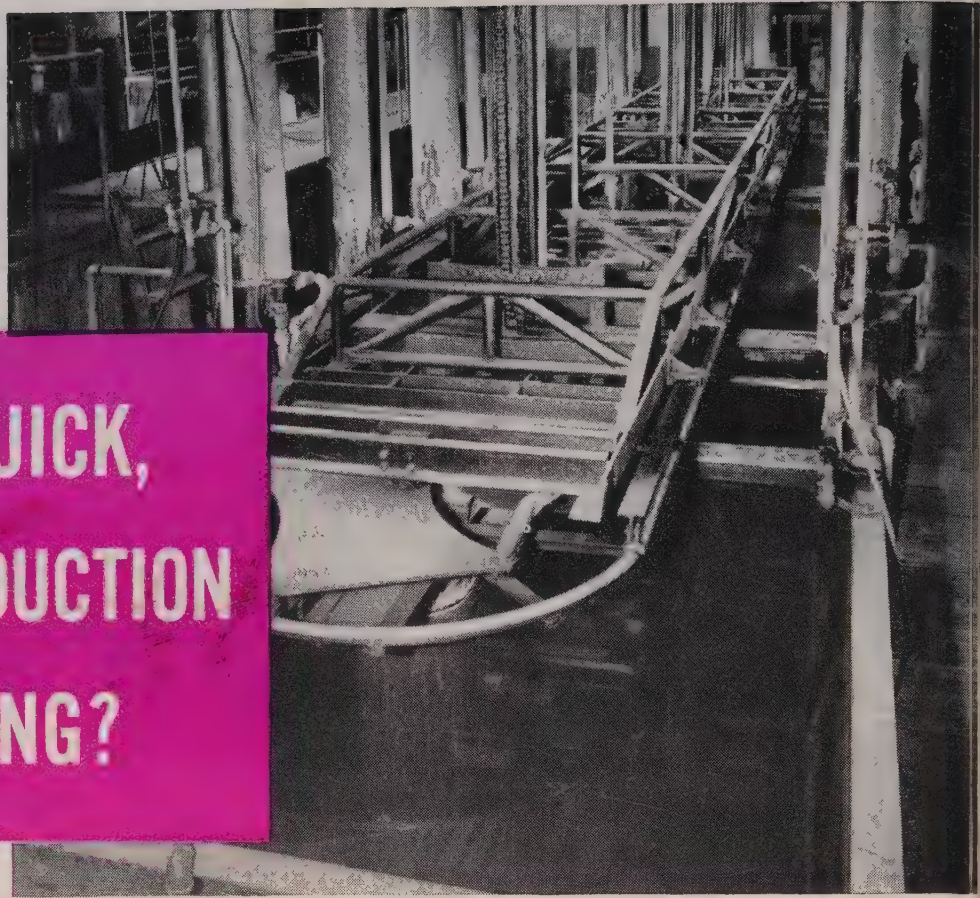
Widespread use of Wickwire Hard Drawn MB Spring Wire in this severe service is your assurance that when you select this high-carbon wire for your particular application, you can always count on getting the finest.

THE COLORADO FUEL AND IRON CORPORATION • Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION • Oakland, California
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo
Chicago • Detroit • New York • Philadelphia

WICKWIRE WIRE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



**NEED QUICK,
HIGH PRODUCTION
CLEANING?**

**METAL MOULDINGS CORPORATION OF DETROIT DOES IT AUTOMATICALLY
with UDYLITE EQUIPMENT!**

"We had to have a FAST . . . yet SURE . . . method of cleaning our automotive stampings before plating. And these stampings are *really* intricate shapes. That's why we chose AUTOMATIC cleaning using a Udylite Full Automatic."

Yes, that's what the people of Metal Mouldings Corporation, Detroit, Michigan, told Udylite. They must combine a large volume of cleaning with no rejects. They found that Udylite equipment assured them of high production . . . while it saved time and manpower. If you have cleaning problems . . . let the Udylite

Corporation provide the answer. Your Udylite Technical Man will show you a faster, more economical, AUTOMATIC way to clean metal parts. Call him today or write direct for all the facts.

THE UDYLITE CORPORATION, DETROIT 11, MICHIGAN. *West of Rockies, L. H. Butcher Co., Los Angeles 23, California.*

PIONEER OF A BETTER WAY IN PLATING

THE
Udylite
CORPORATION
DETROIT 11, MICHIGAN

Superior Tool Diversifies

Detroit firm licensed to manufacture and sell Tarex automatic turret lathes

SUPERIOR Tool & Die Co., Detroit, is putting a new twist in diversification by getting into the machine tool business as a counterbalance to good times.

The explanation is simple. Superior does its highest dollar volume when general business is off, says M. L. Jacobs, president. That's because the auto companies change models more often when sales turn sour.

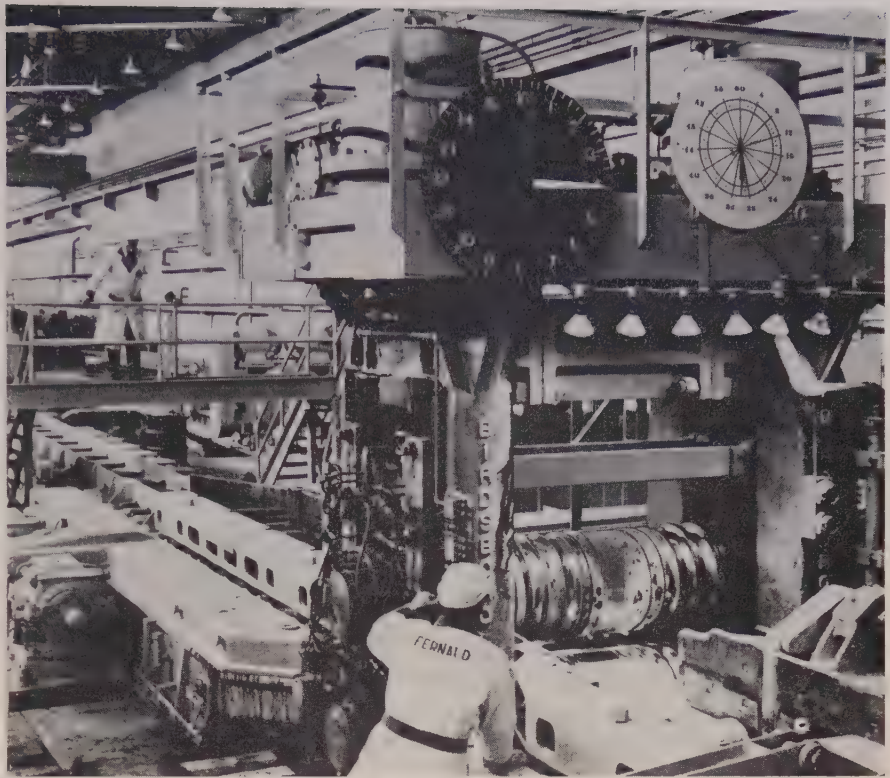
Swiss Design—Another switch is the type of tool Superior will make. It has a license agreement with Tarex Ltd., Geneva, Switzerland, to manufacture and sell Tarex single-spindle automatic turret lathes in the U. S. and Canada. They will be produced by Modern Collet & Machine Co., a Superior subsidiary which also rebuilds machine tools.

The company plans to market at least 100 of the automatics a year, says E. N. Marcus, vice president-treasurer. There are 30 to 35 of them operating in the U. S. today. Eleven pilot models are now being built and will be out in about four months. Two sizes will be produced—42 inches and 64 inches. Many of the 2200 parts comprising the machine will be farmed out to subcontractors.

Offsetting—Machine tool business is noted for its feast-or-famine characteristics, depending on general economic conditions. Superior figures the combination will stabilize the company during any kind of economic weather. Actually, tool and die business today is quite good, says Mr. Jacobs. Auto and appliance makers are revamping models more often, and the staggering of auto model changeovers has been a boon to diemakers by leveling out their busy seasons.

High-Tensile Steel Use Gains

Galion Allsteel Body Co., Galion, O., will employ high-tensile steel exclusively in the construction of its line of dump truck bodies. Oliver C. Henkel, president, says use of this material, previously employed only in special extra-cost, heavy-



New Uranium Rolling Mill

This primary mill, designed and built by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., followed by a continuous Birdsboro finishing mill, is used to roll uranium into bars for further fabrication into slugs used in nuclear reactors. The mill is a vital part of the Atomic Energy Commission's uranium production center at Fernald, O. It is operated by National Lead Co. of Ohio

duty bodies, will make possible over-all weight savings up to 25 per cent.

Brooks Oil Completes Project

Brooks Oil Co., completed a modernization program to increase operating capacity of its Cleveland plant by about 20 per cent. The project provides 20,000 sq ft of additional floor space to the plant which now has a daily capacity of 900 drums of industrial lubricants.

Colorado Fuel Opens Warehouse

Colorado Fuel & Iron Corp., Denver, opened a new warehouse and sales center for steel products, chemicals and fuel in Wichita, Kans.

Organizes Canadian Subsidiary

Eutectic Welding Alloys Corp., Flushing, N.Y., organized Eutectic Welding Alloys Co. of Canada Ltd. to provide service facilities to users of the firm's products in Canada.

Woodward Iron Names Agent

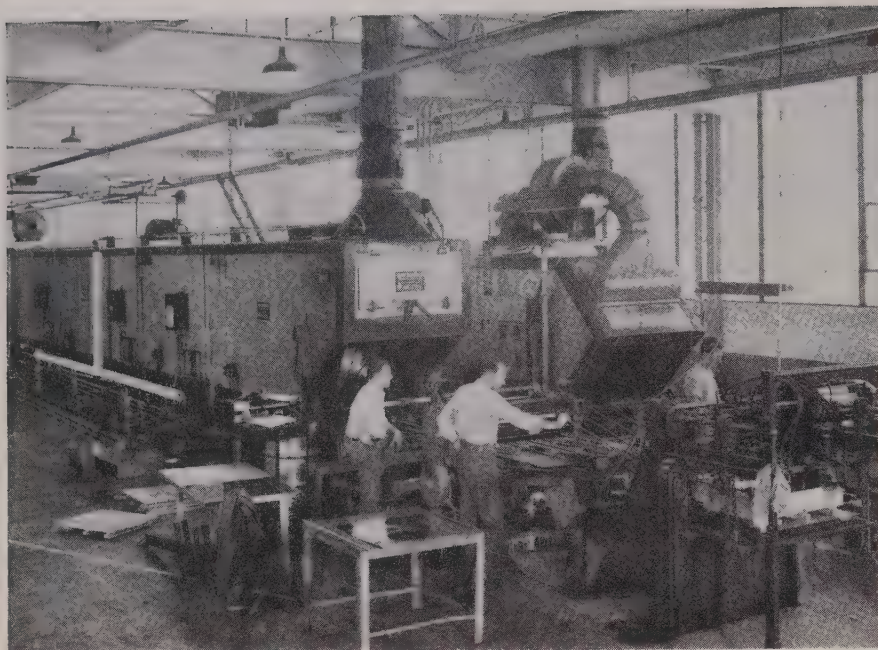
Woodward Iron Co., Woodward, Ala., appointed Hickman, Williams & Co. Inc., Chicago, as its sales representative in the marketing of its pig iron in 22 northern states from the New England States to Kansas and Nebraska.

McCormick Steel Expanding

McCormick Steel Co., Houston, is constructing a \$175,000 building in Oklahoma City, Okla. It will be used as a warehouse, but later may be used for some processing activities.

Bethlehem Enters High Bid

Best bid received in a long time by the Maritime Administration for a discarded vessel was submitted by Bethlehem Steel Co. which offered \$150,390 for the *SS American Sailor*, long used as a schoolship by the Maine Maritime Academy. To be sold because of obsolescence, the buyer must agree to scrap the



Decorating Lines Add to Warehouse Service

Benjamin Wolff & Co. held open house May 19 at its new warehouse in Melrose Park, Ill. The plant is two-and-one-half times the size of the firm's former plant. The company's metal service includes carbon and stainless steels, aluminum, copper, expanded metal and tin mill products. In addition, it has four coating or decorating lines, two of which are shown above, which process 6000 tons of metal a month, these operations ranging from lacquering to four-color work

hull completely within 12 months. The 423-foot, 7129 gross ton ship is afloat at Castine, Me.

Bay State Abrasive Expands

Bay State Abrasive Products Co. has started a \$100,000 expansion program at its Westboro, Mass., plant, to meet rising demand for its new product, Gritcloth. Developed and introduced a year ago, Gritcloth is a tough, open-mesh fabric imbedded with abrasives. The addition will add 60,000 sq ft of manufacturing space.

Vard Builds Plant Addition

Vard Inc., Pasadena, Calif., added a bay to its main plant on Colorado street, that city. The addition will provide 3600 sq ft of floor space and consolidates storage and handling of raw stocks. The firm is a designer and manufacturer of specialized aircraft components and other industrial products.

Pumpmaker Names Distributors

Pioneer Pump Division, Detroit Harvester Co., Detroit, appointed as agents to handle sales and engineering service of its centrif-

ugal and positive displacement pumps: Virginian Electric Inc., Charleston, W. Va.; Shop Supply Co., Birmingham; W. H. Erskine Co., Minneapolis.

Levinson Heads Warehousemen

Aaron P. Levinson, president, Levinson Steel Sales Co., Pittsburgh, was elected president of that city's chapter of American Steel Warehouse Association. Robert C. Waldie, Williams & Co. Inc., was named first vice president. A. L. Peterson of Joseph T. Ryerson & Son Inc., was named vice president, and E. G. Sheasby of Fort Duquesne Steel Co. was elected secretary.

Holden Opens Los Angeles Plant

A. F. Holden Co., New Haven, Conn., metallurgical engineering firm, opened a plant at 3311 E. Slauson Ave., Los Angeles, 58. The plant will produce 50 different salt bath compositions for any heat treating application and 15 types of industrial pot furnaces which may be either purchased or leased. Charles Zavorskis is in charge of plant operations and purchasing at the new plant.

Electrical Firms Merge

Federal Electric Products acquires about 98 per cent of Pacific Electric Mfg. common stock

FEDERAL Electric Products Co., Newark, N. J., manufacturer of circuit breakers and other electrical control and distribution devices, acquired for \$4.5 million, about 98 per cent of the common stock of Pacific Electric Mfg. Corp., San Francisco.

The consolidation knits together two manufacturers of electrical equipment. Federal Electric's products are primarily of low voltage type for industrial and home installations while Pacific Electric's products are primarily of high voltage type for long distance transmission of electrical power.

Plants are located in the following industrial centers: Newark, N. J.; San Francisco and Santa Clara, Calif.; Hartford, Conn.; Long Island, N. Y.; Gary, Ind.; St. Louis; Dallas; and Cleveland. A switchgear plant in Scranton, Pa., is under construction and will begin operations this fall.

Announcement of the merger was announced by T. M. Cole, president of Federal Electric and J. S. Thompson, president of Pacific Electric.

Parker Appoints Representative

Parker Appliance Co., Cleveland, appointed Pace-Turpin & Co., Salt Lake City, Utah, as distributor for its tube fittings. Pace-Turpin also will maintain stocks of related units, including tube working equipment and thread sealers.

Lennox To Build In Toronto

Lennox Furnace Co. of Canada Ltd., subsidiary of Lennox Furnace Co. Inc., Marshalltown, Iowa, has purchased a site in Toronto, Ont., where it plans to erect a plant building with 100,000 sq ft of floor space. Output of furnaces and air conditioning equipment is scheduled to begin before the end of the year.

Metal Fabricators Consolidate

D. E. Makepeace Co. and Union Plate & Wire Co., Attleboro, Mass., metal specialty manufacturers, are

(Please turn to Page 97)

REFRACTORIES— Melting... Cutting Out...?

Stock **NATIONAL** Carbon TRADE-MARK Brick and Shapes for Low-Cost Maintenance

"National" carbon blast furnace linings, of course. But HAVE YOU THOUGHT ABOUT CARBON for the other hot-spots where ordinary refractories conk out from high temperatures or slag-cutting? CARBON, the refractory, has no melting point and low affinity to molten metal and dross. In fact, even in *unfavorable* atmospheres, CARBON frequently outperforms other refractories on a length-of-life or cost-of-replacement basis.

Here are some of the places where "National" carbon and graphite can follow up their good work in the furnace...improve production, deflate maintenance cost, increase product quality and better the safety of equipment and personnel.

**ON NEW APPLICATIONS
OF CARBON, CONSULT
NATIONAL CARBON'S
ENGINEERS FOR PROPER
GRADE AND DESIGN.**

*The term "National" is a registered trade-mark
of Union Carbide and Carbon Corporation*

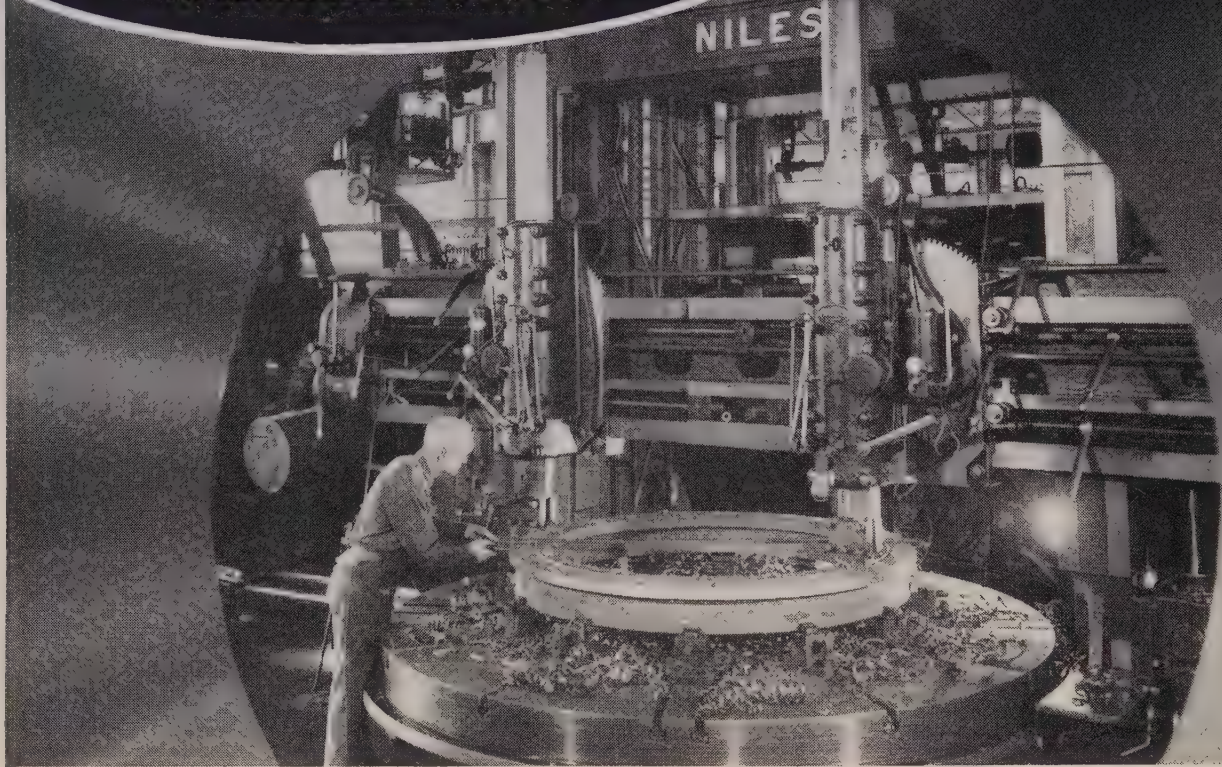
NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices:
Atlanta, Chicago, Dallas, Kansas City, New York,
Pittsburgh, San Francisco

IN CANADA:
National Carbon Limited—Montreal, Toronto, Winnipeg



**100 Years experience has
built the skills that make
STANDARD STEEL Ring-leaders
in industrial circles**



Photographed through one of the smallest forged rings made by Standard Steel, this 120-inch Niles vertical boring mill is machining a gun base mount standard ring which will have a finish O.D. of $69\frac{1}{2}$ inches, which operator is checking.

Experience builds skill, and skilled manufacturing produces quality products. Standard Steel Works has had 100 years of experience to build the manufacturing skills that produce finest quality weldless rings and flanges.

Standard Steel's experience has developed to a high degree the skills that make possible accurate quality control of the analysis and physical properties of their steels

... close control of heat treatment, rolling and other forming operations ... precise machining to assure finishing of rings and flanges to exact specifications.

You can't ignore experience as a guide to quality, and Standard Steel's experience is hard to match ... still another reason why you can always rely on Standard Steel for rings and flanges.

ONE OF SIX REASONS why you should call Standard Steel for forgings and castings:

- 1** Experience—produced by skilled workmen with 20 to 40 years experience.
- 2** Quality Steel—through production of own steel by acid process.
- 3** Uniformity—assured by precise control of forging and rolling operations.
- 4** Fast Service—a vital factor in the continuing growth of Standard Steel for over 150 years.
- 5** Testing—radiographic tests, tensile tests, hardness tests, ultrasonic probing of internal structure, etc.
- 6** Capacity—unsurpassed ability to produce forgings and castings of unusual sizes and shapes, such as weldless rings all the way up to 144" O.D.

For more information, write Dept. 8546

Standard Steel Works Division
BURNHAM, PENNSYLVANIA



BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

(Continued from Page 94)

consolidating operations, with the former continuing as an operating division of Union Plate.

GE Expands Buffalo Plant

Buffalo Tube Works of General Electric Co. has begun erection of a plant addition in Buffalo. The \$100,000 addition will allow increased output of aluminized television picture tubes and will add about 7000 sq ft of floor space to the plant. It is scheduled for completion by the end of June.

Niagara Buys Chisholm-Ryder

Niagara Frontier Industries Inc., Buffalo, purchased Chisholm-Ryder Co. Inc., Niagara Falls, N. Y. John H. Rumbaugh, Greenwich, Conn., is acting president of Chisholm-Ryder; M. C. Llop is vice president. Chisholm-Ryder is a manufacturer of machinery and metal stampings.

Gagemaker Names Distributor

B. C. Ames Co., Waltham, Mass., appointed G. W. Brunton & Son Inc., Kenmore, N. Y., as distributor of its micrometer dial indicators and micrometer dial gages.

Bakelite To Build Three Plants

Bakelite Co., a division of Union Carbide & Carbon Corp., New York, will build three plants for the production of polyethylene. The program will be completed in 1955. One will be built in Texas City, Tex.; one in Seadrift, Tex.; and one in Torrance, Calif.

IRC Opens Sales Office

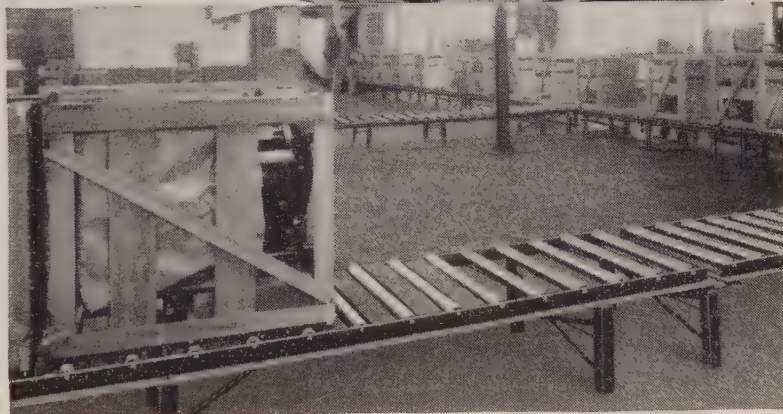
International Resistance Co., Philadelphia, opened a sales office at 112 Montgomery St., Syracuse, N. Y. James G. Perkins Jr. is the general manager of the new office.

Allis-Chalmers Opens Branch

General Machinery Division, Allis-Chalmers Mfg. Co., Milwaukee, opened a branch office at 206 Sixth Ave., Des Moines, Iowa, under the management of Edward A. Rensch. Lake Shore Engineering Co., Iron Mountain, Mich., was

(Please turn to Page 100)

Do you pack and handle your product in crates?



**Whatever you make, pack or handle,
STANDARD CONVEYORS can speed operations**

Material handling often constitutes as much as 50% of total production cost — cut handling costs and you cut production cost.

More than 45 years' experience qualifies Standard to be of expert service on any "package" conveyor need — roller, belt, slat, chain, push-bar, sectional, portable self-contained conveyor units — spiral chutes — pneumatic tube systems. Write —

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minn.
Sales and Service in Principal Cities

Write Dept. ST-63
for Standard's
General Catalog and
tell us what you
want to convey.
Address Dept. ST-63



ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL

PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER

INCLINEBELT • LEVEL BELT • EXTENDOVERYOR
UTILITY BELT-VEYOR • HANDI-DRIVE
CONVEYORS VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

Mechanize 3 out of 5 sigma* hand

You can mechanize a lot of your manual sigma* welding applications with LINDE's new, lightweight SWM-3 machine. One man handles this easily portable machine—it weighs only 40 lbs.—and it's flexible. It can be mounted on a wall, a post, a carriage, or on a tractor-type machine, depending on the work at hand... And best of all, this machine can "think"—through LINDE's electronic voltage control.

Arc voltage control is a LINDE development for machine sigma welding. Set up out of the way, the voltage control instantaneously speeds up or slows down wire feed speed as required by changing arc conditions. The result is that you get smooth, uniform welds through proper control of welding variables.

LINDE'S ELECTRONIC VOLTAGE CONTROL

How many of *your* welding problems are due to a fluctuating voltage? How many? Well, you can eliminate them *all* with LINDE's electronic voltage control. It holds welding voltage substantially constant at any preset value within the welding range. It responds to increases or decreases in arc voltage by speeding up or slowing down the wire feed motor. This action is practically instantaneous and constant arc voltage results.

The voltage control unit is mounted either locally or remote from the machine. Set up near the welding generator or transformer, it makes the welding head (rod drive and wire reel section) small and compact—easy to handle.

One Knob Control

After making several basic adjustments that set the SWM-3 for a specific job, the machine practically works by itself. Just throw the switch to start welding. It's as easy as that. One simple knob is all you turn.

Quick, Easy Starts

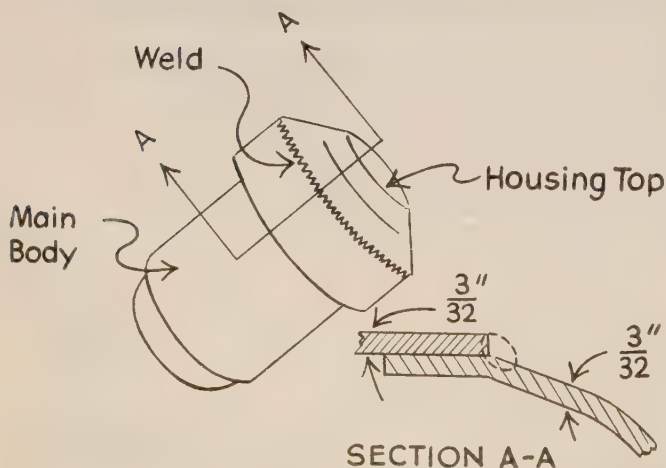
Use the retract starter built into the voltage control... turn on the wire feed switch, and the retract starter automatically causes the wire to:

1. feed down until it touches the work,
2. retract from the work, drawing an arc, and
3. start feeding down again, maintaining the preset welding arc voltage.

Ample Power

Because of a high operating voltage built right into the control, the wire feed motor gets ample power for smooth, efficient operation.

A Typical Application



LINDE's SWM-3 welds most metals fabricated commercially—aluminum alloys, stainless steel, carbon steel, deoxidized copper, Everdur, and aluminum bronze. Butt, lap, fillet, or corner welds are made in these metals from 16 gauge thickness upward.

This steel compressor housing is now being fabricated with LINDE's new SWM-3 machine for sigma welding. Lap welds in the 3/32-in. material are made at 55 in. per minute. Current is 380 amp. dcrp, using 3/32-in. welding wire.

* Initial letters of Shielded Inert Gas Metal Arc. "Sigma" is easier to say.

welding jobs with this little machine

**HERE'S ALL YOU NEED
RIGHT AT THE WORK**

Welding Head

Net Weight 40 lbs.

It houses wire drive, wire-straightening device,
water-cooled cup, wire guide tube
and holder

It handles 1/32, 3/64, 1/16, 3/32, welding wires

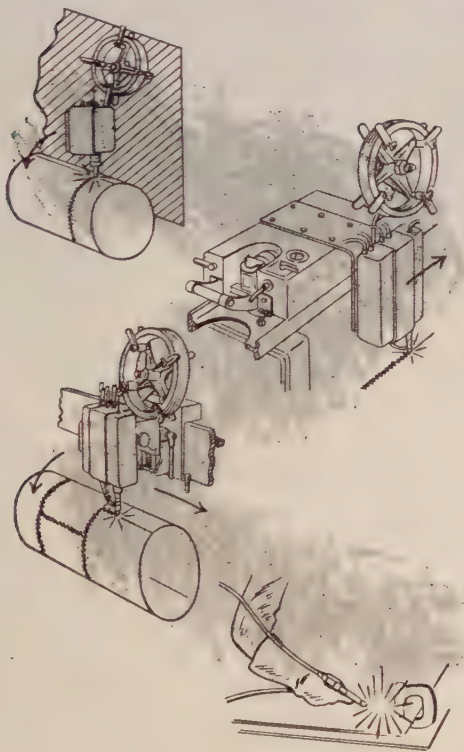


with the big brain



*LINDE's dependable elec-
tronic voltage control unit.*

LINDE'S SWM-3 IS FLEXIBLE



USE IT IN A STATIONARY POSITION

Set up the welding head on a wall, post, or vertical bracket . . . Move the work to be welded beneath it. You can use the SWM-3 for many jobs in this position—it will handle four different sizes of welding wire.

GIVE IT MOTION

Mount the welding head on the OXWELD CM-37 tractor-type machine carriage . . . The SWM-3 will make longitudinal welds in cylinders, or butt, lap, and fillet welds in aluminum and stainless or carbon steels.

COMBINE BOTH SETUPS

It's just as easy to mount the SWM-3 on the OXWELD OM-48 side beam carriage: Use it for making longitudinal welds in any part. Stop the unit, revolve the work, and you can make circumferential welds in the same part—*without changing the setup.*

OR, USE IT MANUALLY

By adding an adaptor, you can use the SWM-3 with your sigma hand welding torch. It becomes a flexible drive unit to help you handle all of your other jobs that do not lend themselves to mechanization.

Ask LINDE to tell you more about the SWM-3 . . . There's a good chance that it will help you do one of your present welding jobs better, easier, faster, and cheaper. Telephone or write the nearest LINDE office today.

LINDE AIR PRODUCTS COMPANY

A Division of Union Carbide and Carbon Corporation
30 E. 42nd Street  New York 17, N.Y.

Offices in Principal Cities

In Canada: Dominion Oxygen Company, Limited, Toronto

The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation

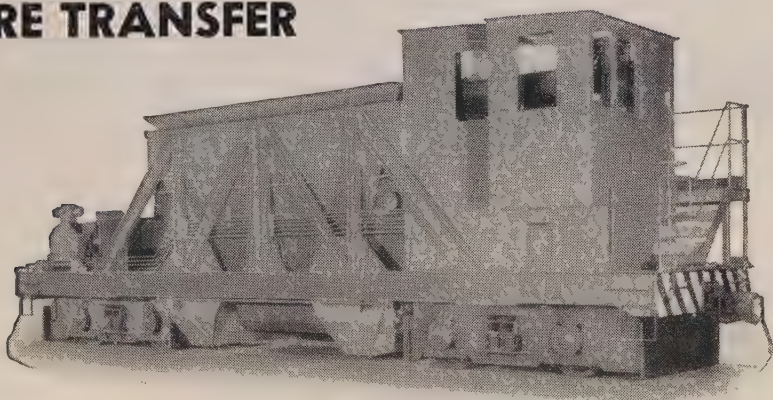
DEPENDABILITY TO SATISFY

**RECORD
DEMANDS**

**ATLAS
CARS**

Atlas Cars for steel plants are known to have that extra work factor which is so important in these days of high production.

50-TON BOTTOM DUMP ORE TRANSFER



This 50-ton ore transfer is a modern air-operated car with a heavy slab truck to protect motors and brakes when plowing through ore piles. For added safety a folding car pusher arm is used and is provided with a safety latch which cannot be lowered unless the switchman holds the latch. The overhung cab allows a clear line of vision for the operator.

Special features include electric hopper heaters, centralized lubricating, roller journal bearings, air brakes and, of course, all necessary safety features.

Custom Builder of Steel Plant Cars



THE ATLAS CAR & MFG. CO.

ENGINEERS

MANUFACTURERS

1140 IVANHOE RD.

CLEVELAND 10, OHIO, U. S. A.

(Continued from Page 97)

named a distributor for Allis-Chalmers motors and drive equipment, while Van Meter Co., Cedar Rapids, Iowa, was named distributor for its motors and transformers.

GM Plans Assembly Plant

General Motors Corp., Detroit, will erect an auto assembly plant in Oshawa, Ont. Ground will be broken at once for the plant with partial production scheduled to begin in the fall. All Buick and Oldsmobile Canadian operations will be transferred to the new unit.

Printing Equipment Firm Expands

American Type Founders, Elizabeth, N. J., combined its web-fed offset and rotogravure divisions, formerly operated separately, and is preparing to move into a new plant in Mount Vernon, N. Y., which will double the manufacturing facilities for this type of printing equipment.

Metalloid Opens Chicago Office

Metalloid Corp., Huntington, Ind., producer of metal cutting, drawing and grinding fluids, opened a Chicago office at 753 W. 79th St. Technical field service and sales are under the direction of Harold Sexauer.

Pipe Fabricator Appoints Agent

Swan Engineering Co. Inc., Bloomfield, N. J., fabricator of pipe coils and tubular parts, appointed Robert H. Newton Co., Cleveland, as its Ohio sales representative.

Soule Steel Builds Warehouse

Soule Steel Co., San Francisco, is building a fabricating plant and warehouse at 4100 W. Marginal Way, Seattle. The firm has similar facilities in Portland, Oreg., Torrance, Calif., and Los Angeles.

Association Issues Directory

National Screw Machine Products Association, Cleveland, issued the fourth edition of its buying directory which lists the facilities and services of all member com-



You know he'll always steer you right

Strip this man of everything but his eyesight, and he *still* could steer you through. For he has "learned his book" well, both in print and in experience. But when the book doesn't cover a tough new situation, then he throws the book away and acts on his own.

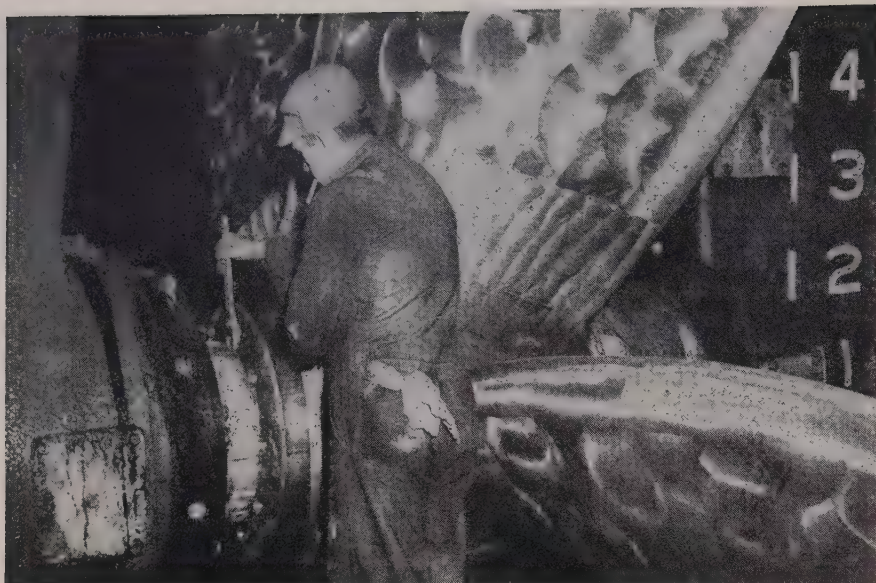
That's exactly the way you can expect the "ship's company" here at Bristol to act, when they act in *your* interest. They know how to steer through your shipments of Brass sheet, rod and wire, and how to get them there *right*,

and *on time*. That's how the clipper ships from Bristol, England, became famed around the world. . . . And *that's what "Bristol-Fashion" means.*

. . . .

The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means **Brass at its Best**



New Alloy Is Used in Casting Propeller

This five-bladed propeller, completed in the Eddystone, Pa., foundry of Baldwin-Lima-Hamilton Corp., was produced of a new alloy which has impressive characteristics. The material, Nialite, is an alloy of copper, nickel, aluminum and other elements. International Nickel Co. Inc., New York, assisted Baldwin-Lima-Hamilton in development of the light-weight, high-strength alloy

panies. The directory also contains a statement of policy to customers which has been subscribed to by all members of the association.

Changes Machinery Marketing

Beginning June 1, the newly formed Davis-Standard Sales Corp., Mystic, Conn., will assume the exclusive marketing of extruders and molding presses manufactured by Standard Machinery Co., that city. Standard molding presses were sold formerly through F. J. Stokes Co., Philadelphia, under the name of Stokes Standard molding presses.

New Firm Offers Quonset Units

Graham Steel Structures, a newly organized firm with headquarters at 4147 Commerce, Dallas, was appointed a dealer to handle quonset buildings manufactured by Great Lakes Steel Corp., Ecorse, Mich.

Tubemaker Expands Plant

Standard Tube & T. I. Ltd., Woodstock, Ont., is adding 100,000 sq ft of floor space in order to increase its fabricating capacity and to enter the stainless tube market. The company also is installing two tube reducing machines for the

manufacture of cold-reduced seamless tubing. Standard Tube has five electric weld mills with a rated annual capacity of 20,000 tons of tubing. About 50 per cent of the tube Standard produces is fabricated in its own plant, mainly for the automotive, electrical and furniture trades.

Plans \$5 Million Tube Mill

Bridgeport Brass Co., Bridgeport, Conn., will build a \$5 million tube mill near its Housatonic plant in that city. Construction is to start immediately, and completion is expected next October with initial production under way by the end of the year. Company officials say another development program "bearing on production of aluminum" will be undertaken when the old tube mill is vacated.

Buys Mechanical Spring Division

Connor Spring Mfg. Co., San Francisco and Los Angeles, acquired the manufacturing facilities of the Mechanical Spring Division, L. A. Young Spring & Wire Corp., Detroit, boosting the former's production capacity an estimated 25 per cent. The Young organization has terminated production of me-

chanical springs to gain floor space in its San Leandro, Calif., plant, now fabricating fuselages for Navy fighters. The Young firm will continue to manufacture wire display stands, baskets, shelves and other related wire products.

Utica Drop Forge Names Agent

Utica Drop Forge & Tool Corp., Utica, N. Y., appointed D. James Murray Co., Seattle, as sales representative in the states of Washington and Oregon, in co-operation with Gardner Distributing Co., that city. The Utica firm makes pliers, adjustable wrenches and screw drivers.

Reliance Electric Opens Branch

Reliance Electric & Engineering Co., Cleveland, manufacturer of motors and motor-drives, established a branch office at 13 W. 25th St., Baltimore. The office is staffed by A. C. Schettler and W. C. Mitchell, sales engineers.

Trinks Award Goes to Four

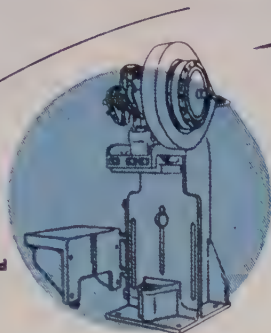
The annual Trinks Award for outstanding contributions to the scientific and economic progress of the industrial heating industry was presented to these four men: Carl F. Mayer, president, Carl Mayer Corp., Cleveland; Harry H. Harrison, president, General Alloys Co., Boston; Carl I. Hayes, president, C. I. Hayes Inc., Providence, R. I.; and J. Spotts McDowell, technical assistant to the president, Harbison-Walker Refractories Co., Pittsburgh.

Goodyear Enlarging Facilities

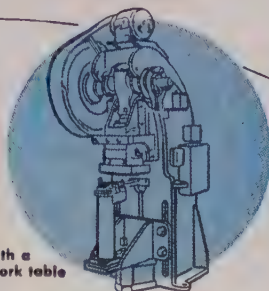
Goodyear Tire & Rubber Co., Akron, will invest about \$5.5 million in plant expansions to meet the growing demand for the company's chemical products. The expansion program includes: Chemical gum plant addition, Akron, \$1.5 million; new Niagara Falls, N. Y., plant and additional equipment for plants in that city, \$4 million. Ground has been broken for the Akron plant addition. Construction work on the Niagara Falls plant addition is expected to get under way early this summer. Bids are being received on the general

Multi-purpose Press You Can Keep Busy All the Time

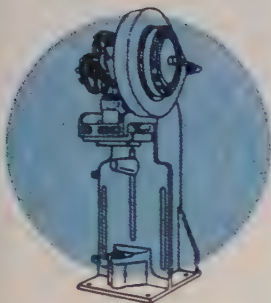
Used as a standard
gap-frame press



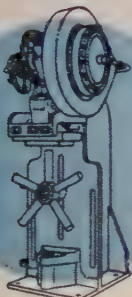
Used with a
traversing work table



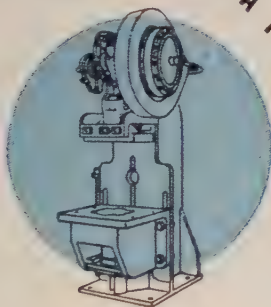
For regular horn
press operations



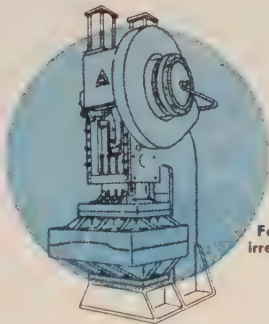
As used with
special feeding device



As used with a
die cushion



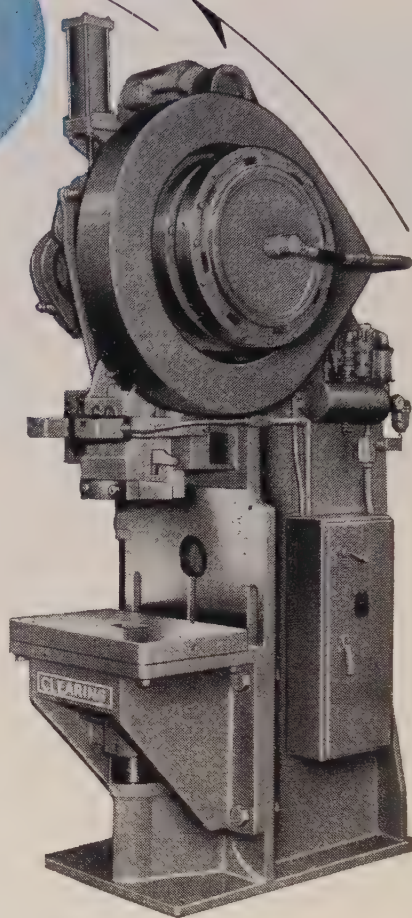
For large or
irregular parts



Clearing horning presses, properly tooled, are the most versatile machines available for the variety of operations performed in many stamping plants. These machines lend themselves to being equipped with special bolsters, work tables and feeding arrangements—getting peak production on both special and standard jobs. Find out about Clearing horning presses and special attachments that will be exactly right for your production. Write or call Clearing Machine Corporation.

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Presses. Write for
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CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION



CLEARING MACHINE CORPORATION, 6488 West 65th St., Chicago 38, Illinois • HAMILTON DIVISION, Hamilton, Ohio

contract and on electrical and piping contracts. Four new factory units will comprise the Niagara Falls construction program.

Clark Controller Acquires Firm

Clark Controller Co., Cleveland, acquired Fuller Johnson Corp., a company which in turn owns and operates American Electric Switch Corp. and Good Roads Machinery Corp., all of Minerva, O. American Electric manufactures safety switches and electric service entrance equipment and will continue to make these items. Good Roads Machinery makes road machinery accessories and large leaf collectors which pulverize leaves. These Minerva firms also have a backlog of government orders for mechanical controls for Army trucks and will continue the manufacture of such items.

Robert H. Hoge, president of Clark Controller, succeeds William F. Kuehneman as president of these Minerva firms.

White Motor Expands Branch

White Motor Co., Cleveland, is starting a \$500,000 construction program which will treble the size of its Cleveland branch operations on East 49th street, near St. Clair avenue. The company also plans to break ground shortly on a new branch sales and service building to cost \$250,000 in Regina, Sask., Canada.

Scully-Jones Names Distributors

Scully-Jones & Co., Chicago, designer and manufacturer of precision holding tools, appointed as stocking distributors: Gurley-Ortman Indiana Inc., Indianapolis; Cummings & Co., Wichita, Kans.; Patrick H. Dillon Co., New Orleans.

Laclede-Christy Buys Firm

Laclede-Christy Co., St. Louis, purchased the plant properties of Whitehall Sewer Pipe & Stoneware Co., Whitehall, Ill. The principal product made at Whitehall is vitrified clay sewer pipe. Laclede-Christy obtains facilities for the manufacture of vitrified products of sizes and shapes which it did not produce previously. The firm

also produces fire brick and other types of refractories.

Firth Sterling Opens Branch

Firth Sterling Inc., Pittsburgh, producer of high-speed steels, tool and die steels, stainless specialties, high-temperature alloys, sintered tungsten carbides, chromium carbides and high-temperature cermets, opened a branch office at 1100 Holcombe Blvd., Houston. Manager of the new southwestern district is Robert B. Lewis.

Danielson Heads Ceramic Society

R. R. Danielson, manager of ceramic service, Metal & Thermit Corp., New York, was elected president of American Ceramic Society, Columbus, O., succeeding W. E. Cramer, Industrial Ceramic Products Inc., Columbus.

Frasse Builds in Connecticut

Peter A. Frasse & Co. Inc., New York, steel distributor, is constructing an office and warehouse building on Locust street, Hartford, Conn. The building will be devoted to the distribution of alloy, stainless and cold-finished carbon steels and tubing in the New England area.

Canadian Agent Appointed

United States Testing Co. Inc., Hoboken, N. J., appointed W. J. Westaway Co. Ltd., Hamilton, Ont., as its Canadian agent. United States Testing, a scientific, research and testing organization, also makes testing instruments.

Knapp Offers Russ Furnaces

James H. Knapp Co., Los Angeles, designer and manufacturer of industrial furnaces, announces manufacturing, sales, installation and servicing agreements for all products of Russ-Elektroofen K. G., Cologne, Germany, in the United States, Mexico and Canada. This association makes available to American industry, for the first time through United States sources, the Russ electric melting furnaces and hearth holding furnaces for aluminum, brass, copper, iron and alloys.

Invests in Japanese Firm

N. V. Davis, president, Aluminum Ltd., announced in Montreal, Que., that final steps are being taken toward an agreement between Aluminium Ltd. and Nippon Light Metal Co. Ltd., Japan, whereby the Canadian company will acquire a half interest in the Japanese concern.

Skinner Chuck Co. Builds Plant

Skinner Chuck Co., including Skinner Electric Valve Division, has completed an 85,000-square-foot plant in New Britain, Conn. The plant is geared to straight-line production.

Heavy Press Program Progresses

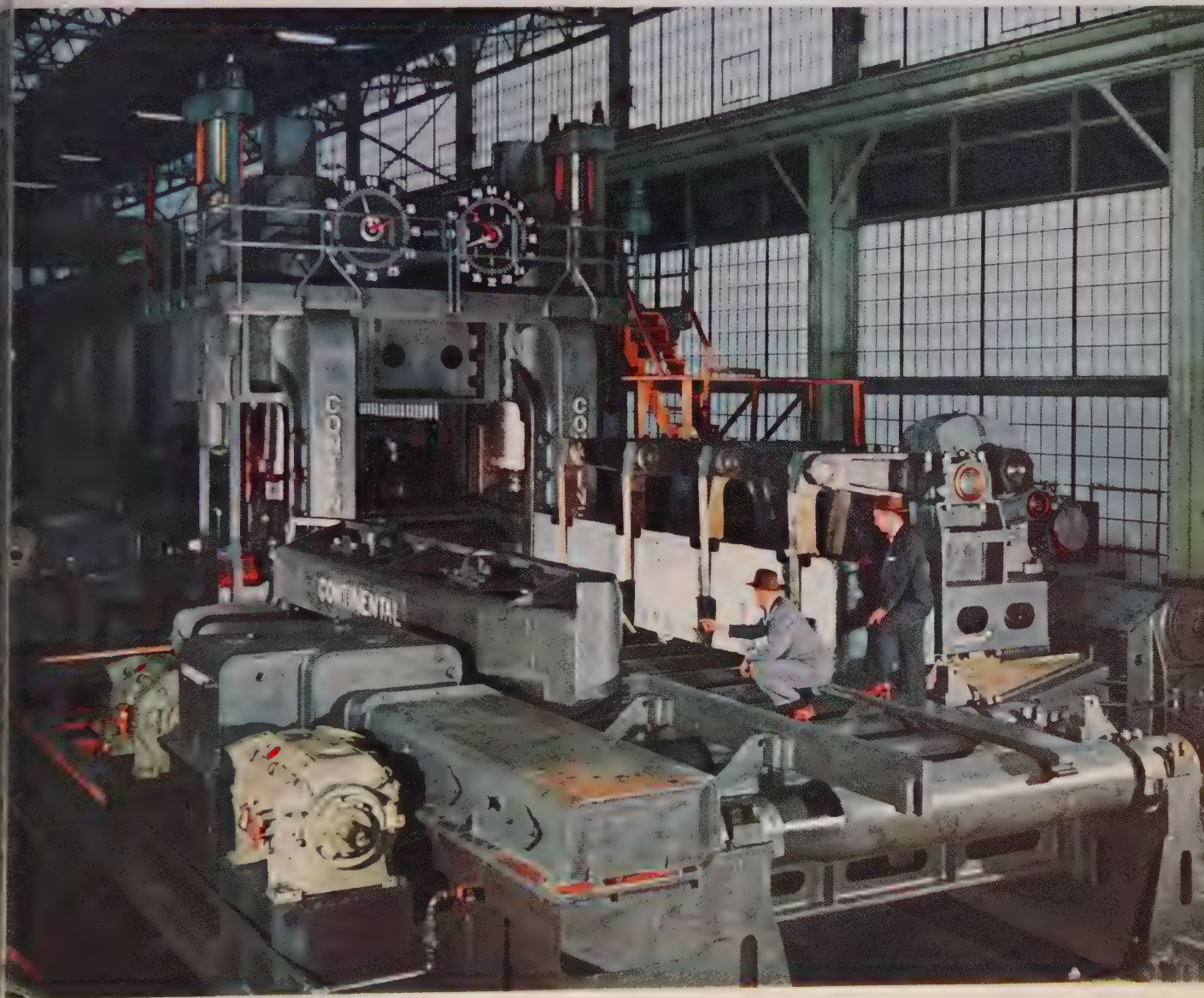
Ground has been broken for this building to house two massive forging presses which are part of the Air Force's defense program. These are of 35 000-ton and 50 000-ton capacity. The building will be located adjacent to Aluminum Co. of America's Cleveland Works, where Alcoa maintains large aluminum and magnesium forging facilities. Total cost of the plant will be about \$40 million, with the company spending several additional millions on supporting facilities necessary to the operation of such mammoth equipment. The building is scheduled for completion near the middle of next year. Mesta Machine Co., Pittsburgh, designed the 50,000-ton press; United Engineering Foundry Co., Pittsburgh, the 35 000-ton press.

Sightmaster Subsidiary Formed

Sightmaster Corp. of Illinois, 641 N. Michigan Ave., Chicago, has been formed to distribute throughout the Middle West steel products: welding rods and electronic equipment produced by Sightmaster Corp., New Rochelle, N. Y. Officers of the new firm are: President, Robert L. Richards, formerly sales manager for Bucky Steel Corp.; vice president of Rocket Steel Corp. and president of Lakeside Steel Corp.; treasurer, M. L. Kaplan; president of Sightmaster Corp.; secretary and general manager, E. C. Rose, formerly president of London Steel & Mfg. Co.

CONTINENTAL

46-INCH HIGH LIFT BLOOMING-SLABBING MILL



★ Complete Rolling Mill Installations ★

SLABBING MILLS
UNIVERSAL MILLS
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HOT STRIP MILLS
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Mills complete with
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★ ★ ★
CONTINENTAL CHIPPER
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BLOOMING MILLS
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BILLET MILLS
ROD MILLS
MERCHANT MILLS

CASTINGS—carbon and alloy steel
from 20 to 250,000 pounds

ROLLS—iron, alloy iron and steel
rolls for all types of rolling mills

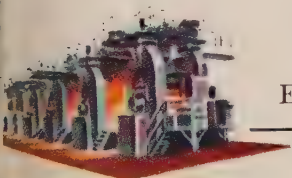
WELDMENTS fabricated steel
plate, or cast-weld design

Plants at

East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

CHICAGO • PITTSBURGH

CONTINENTAL
Foundry & Machine
Company





Is compact design your problem?

here's how portable electric tool manufacturers solve it with **NEEDLE BEARINGS**

Torrington Needle Bearings are designed into many portable electric tools because their small cross section permits the close shaft-to-center distances so necessary to compactness.

They have been *performance-proved* through years of successful operation on counter shafts, pinion shafts and spindles in drills, buffers, sanders, grinders and other electric tools.

Since it was introduced nearly twenty years ago, many manufacturers throughout industry have made the Torrington Needle Bearing "standard equipment" for products requiring an anti-friction bearing that's light, compact and has high rated radial capacity.

Why not find out how Torrington Needle Bearings can be used to advantage in your products?

THE TORRINGTON COMPANY, Torrington, Conn., South Bend 21, Ind.

TORRINGTON *NEEDLE* BEARINGS

Needle • Spherical Roller • Tapered Roller • Straight Roller • Ball • Needle Rollers

Trade-marks of some of the portable tool companies whose products enjoy the benefits of Needle Bearings.

SKIL
PORTABLE TOOLS

STANLEY

**MILLERS FALLS
TOOLS**
SINCE 1865

STOUX

PET
POWER TOOLS

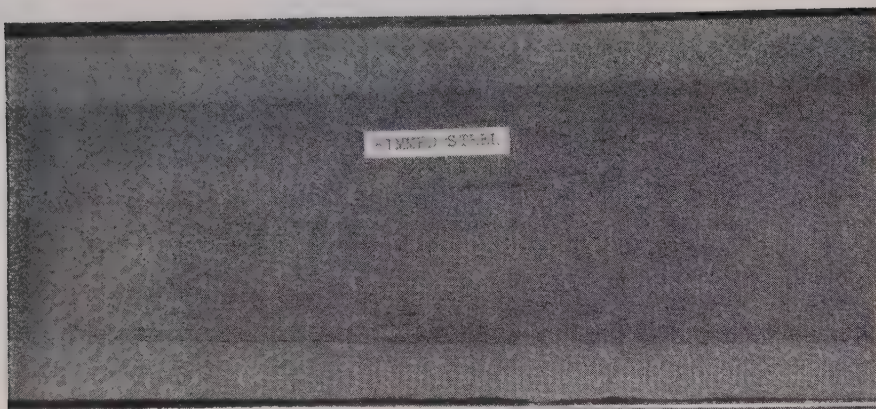
Speedmatic
POWER & CARBIDE

Thor

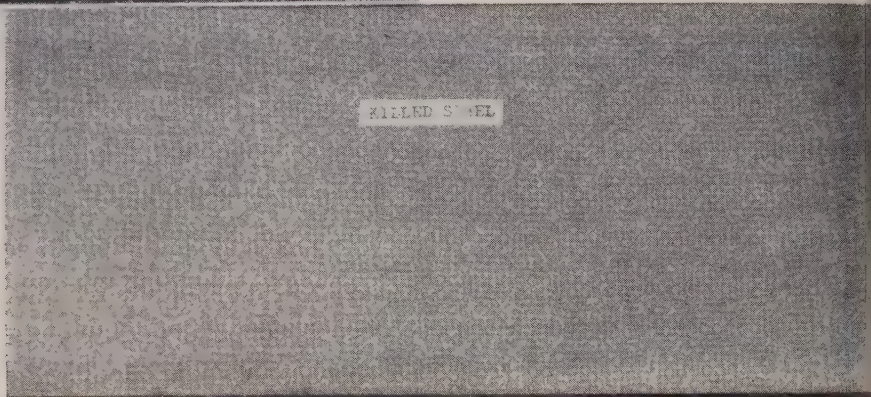
Milwaukee

Black & Decker

Mall



These highly-magnified etched sections of rimmed and killed steel show grain structure differences. The latter has more uniform composition but poorer surface for enameling.



By M. B. GIBBS
Quality Control Department
and
F. R. PORTER
Ceramic Research Engineer
Inland Steel Co.

What Steel for Enamelters?

Short supply of the preferred types of sheets forces enamelters to use whatever is available. Some substitutes for enameling iron hold considerable promise

FEW PEOPLE outside of the enameling industry realize that a serious situation exists—shortage of practically all types of steel and iron sheets best suited for enameling. This has led to widespread use of nonenameling grade sheets with resultant higher enameling costs, thicker coatings and increased warpage of enameled parts.

Some mills have increased their capacity of enameling sheet, but for the most part, there appears to be a lack of interest in the production of such sheets when mills are operating at or near peak capacity. Until the market becomes more attractive to producers of this sheet, enamelters will have to use whatever types are on hand.

What's Available — Types and grades of sheets available to and being used for porcelain enameling

as we would place them, in order of increasing desirability as regards enameling properties, are:

Mild Steel (low carbon)

Killed hot rolled

Killed cold rolled

Rimmed hot rolled

Rimmed cold rolled

Enameling Iron

Hot rolled

Cold rolled

(all enameling iron is of the rimmed type)

Special Irons and Steels

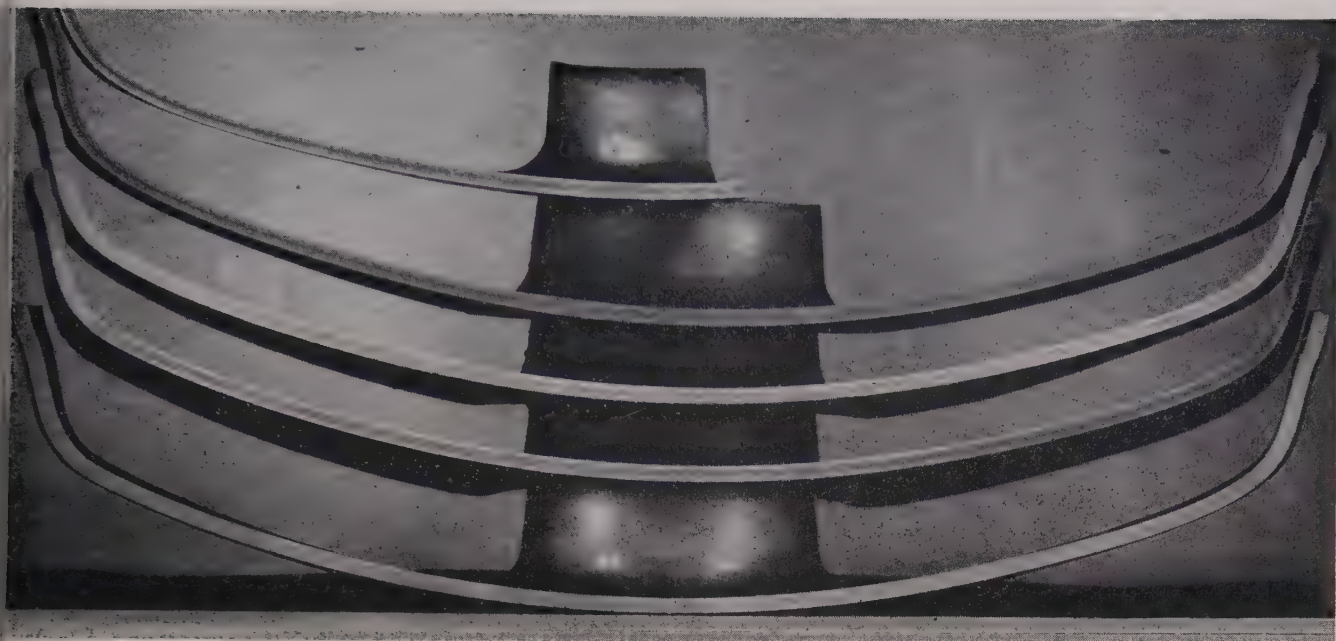
(such as titanium-steels)

Mild Steels—Under the mild steel classification falls tin mill black plate (a cold rolled product) used largely by the hollow-ware industry; cold rolled sheets used by the hollow-ware and stove industries for particular applications; hot rolled and hot rolled annealed, an-

nealed, pickled sheets. Hot rolled annealed sheets, while coming within this classification, are not used for enameling purposes because of the likelihood of the loosely-adhering partially reduced oxide on the surface of the sheet causing difficulty in enameling.

Mild steel is used for parts where warpage or sagging at enameling temperatures can be tolerated where warping does not occur, for which the quality of enamel need not be the highest. Drawing quality of these sheets is excellent or can be so made when desired.

Enameling Troubles—Enameling quality of mild steel is inferior to that of the other two types. Relatively high carbon content is mainly responsible, although manganese adversely affects enameling quality too. Carbon, present as iron



Segregation behavior of rimmed steels and enameling iron concentrates the impurities in the center, leaving sound iron surfaces for best enameling

carbide, is highly reactive with iron oxide, hydrogen, etc. at enameling temperatures. One of the reactions is a gaseous carbon compound which, if evolved in sufficient quantity, may result in a defective coating in both appearance and adherence.

Killed mild steel is not used generally for enameling purposes. All indications are that its enameling properties are inferior to those of rimmed mild steel. However, it is the base metal for the best deep-drawing steels.

Sagging and Warping—The resistance of mild steel to sagging and warping at enameling temperatures is comparatively low. This is due to the fact that enameling temperatures are above the transformation or critical temperatures.

There is not only a decided lowering of the tensile strength but also a rather abrupt contraction on heating and an expansion on cooling at these critical temperatures. Mild steel has two of these critical points, and both are below or in the enameling temperature range for enamels maturing at 1550° F.

Enameling Iron—This name has been given to a metal that is actually a rimmed, low-metalloid steel or iron. Compared to mild steel, it is a premium product. Longer open hearth time is necessary for lowering the carbon, manganese, phosphorous and sulphur content and higher open hearth temperatures are involved since the melting point rises with increasing purity, both of which reduce the life of the open hearth lining.

Enameling iron has a "red short" or "critical working" temperature range, within which the metal is brittle and practically non-workable. This "red short" range is caused by the low manganese-to-sulphur ratio in the metal, and special hot rolling precautions are required. Sufficient manganese would eliminate this range, but enameling and sag resisting properties decrease with an increase of manganese.

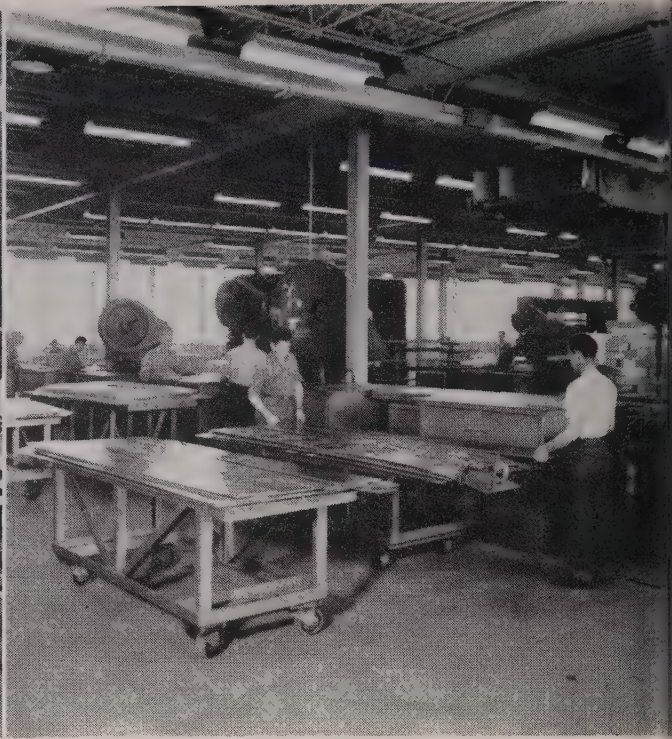
Good Draw—Drawing quality of enameling iron is good but not as good as that of mild steel. Yield, tensile strength and ductility are lower in the heat treated condition.

The lower carbon and manganese content of the metal accounts for the somewhat inferior drawing

(Continued on p. 131)

RECOMMENDATIONS TO ENAMELERS

1. Examine all special steels, processes and enamels very carefully. Some of them may save you a lot of money and reduce your headaches immeasurably.
2. Of the non-special steels, enameling iron is the best metal yet produced. Use it if at all possible for high quality finishes.
3. If enameling iron is not obtainable then use rimmed mild steel with first preference for the cold reduced product.
4. Use killed mild steel as a last resort.
5. By all means work with your Purchasing Department and know beforehand what metal you are going to have to enamel and how to process it.



Far cry from the cramped and crowded production space in their old plant is Binks' new headquarters. Roomy layout is designed to up production and worker morale

Pre-planning Doubles New Plant's Output

Co-ordinated process engineering and architecture give Binks' new sheet metal plant a high score in economy of maintenance and operation. Overcrowding is thing of past

ELAPSED operational time from sheet steel to completed paint spray booth crated and ready for shipment is cut in half. A single shift operation produces more than did a double shift plus a heavy schedule of overtime at the former plant. Handling is reduced forty per cent, and potential for producing all types of booths is doubled.

All this is accomplished in the new sheet metal plant of the Binks Mfg. Co., according to Burke B. Roche, company president.

These savings and production increases for this manufacturer of spray painting equipment and water cooling towers are the results of planned and achieved balances which characterize proc-

ess layout and building architecture and engineering.

Only the Beginning—The new plant, the first step in a co-ordinated building program for the company which if carried forward as now contemplated will eventually bring all of the company's facilities to the site, tempers the most advanced techniques with proved traditional procedures to obtain a unit that cost less and produces more than is normally expected of comparable buildings.

The company's Chicago buildings have long constricted a constantly growing production volume, offering no more available floor area for any kind of efficient expansion. One of these has 100,000 square

feet, and another leased building nearby is considerably smaller. The divided production locations made necessary a great deal of trucking back and forth, considerable double-handling of materials, and "loops instead of aisles," to use the plant superintendent's phrase.

Space has been at such a premium that it was even found necessary to remove a railroad ramp at the back of the property to use for building expansion the small bit of land it was occupying. Located as the company is in the heart of Chicago's industrial west side, it is hemmed in by other plants. And forever precluded is any consideration for off-street parking areas and landscap-



Majority of the orders call for custom tailored jobs, so the layout department is a vital one in the new plant. Well-lighted tables save eyes and increase precision



Stack locations in sheet steel storage area are based on volume, frequency of use and weight. Aisles run parallel to crane track which is 146 feet in length

grounds which are more and more a part of the industrial "good neighbor" policy.

First Move — The new Binks' plant is on a 24.5 acre site in Franklin Park, Ill., a western suburb of Chicago. The first unit in the over-all plan is a one-story structure of functional design incorporating steel, brick and concrete and covering 64,000 square feet.

Plant layout engineers together with company personnel foresaw a new sheet metal plant vastly different from that housing the Chicago operations. True, the production processes for manufacturing booths will remain nearly the same, but there the similarity ends. Different techniques in handling many of the steps in the fabrication of spray booths, floor area providing for the proper spacing of machines and adequate aisles and storage systems, and new equipment such as a 10-ton crane make a startling difference.

New Degreaser—Among this new equipment is a degreasing unit which, with the aid of a single worker, the 10-ton crane and specially constructed hand-trucks, processes as much as 3500 pounds of

sheet steel an hour. Whereas this degreasing has formerly been done manually a sheet at a time because there was no room to install a degreaser, now entire hand-truck loads of sheet steel are cleaned as needed, in one rapid operation.

The hand-trucks used in this degreasing operation may be of interest to other manufacturers. Designed by company engineers, they are made with a wheel base detachable from the truck rack and body permitting the crane to hoist the entire load into the degreaser and lift it out again to place back on the waiting truck chassis. These racks also allow the degreasing solvent to drain properly so plant floors around the unit remain clean and waste is eliminated.

Another Punch Press—Production requires the use of as many as ten dies for various items. The company has depended on two punch presses in which dies were changed frequently. The number of die changes is reduced significantly by adding one new punch press and work crews are benefited by an uninterrupted and continuous operation.

Other new equipment includes a shear and press brake which will

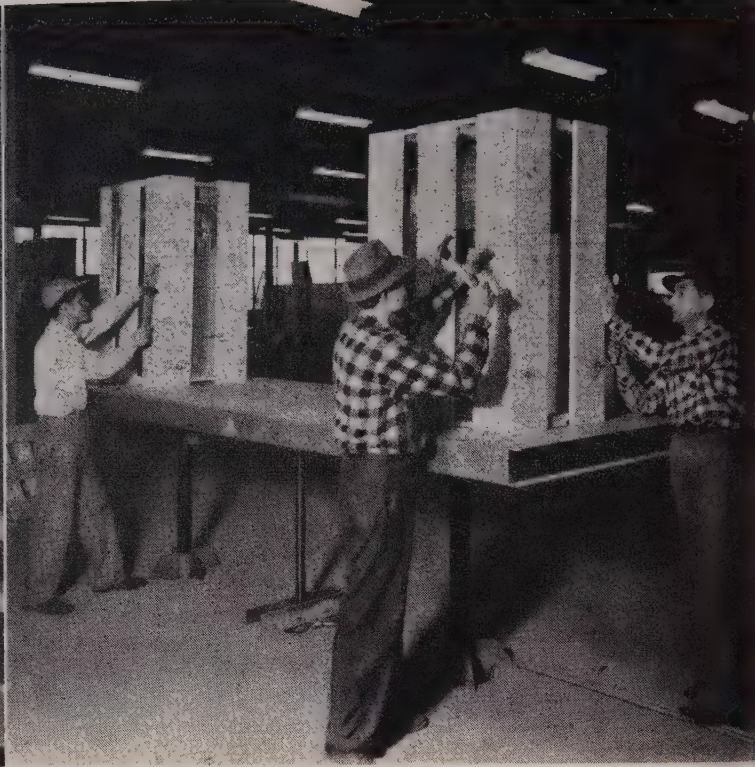
handle up to 3/8-inch mild steel plate. This increases flexibility of fabrication by making possible the forming of structural members whereas earlier limitations made necessary reliance on structural shapes obtained from outside sources.

Labor Savers—Plant layout engineers did not over-conveyorize. A monorail for transporting water pans (as large as 8 x 20 feet) from the welding department to spray booth and a trolley for handling smaller parts inside the spray booth were installed, but the efficiency of hand-trucks made it possible to forego a complete overhead conveyor system at this time. The 10-ton crane selected for servicing the storage area and adjacent degreasing unit provides for push-button control from the floor by either of the two men who alone furnish the manual help necessary for these operations.

Planning for the new building brought forth the suggestion that hydraulically-elevated crating platforms be used. Formerly this crating work required employees to work on hands and knees or in other uncomfortable and inefficient positions. The elevated platforms may



Downdraft air movement in spray booth permits painting both sides of the part without turning. Clean and fume-free air, heated to room temperature, is maintained



Hydraulically-elevated platforms are used in crating area of plant. Formerly this work required employees to work on hands and knees or in other inefficient positions.

now be adjusted to eliminate such awkward procedures and continually maintain the most convenient working height. They have a further advantage in restricting the crating area.

Subtle Selling — Company officials saw an opportunity in the new plant for a practical demonstration of a spray booth which would embody the latest principles in industrial spray booth development. Accordingly, a Dynaprecipitator spray booth with a working area 15 feet wide by 30 feet long and which includes the downdraft air movement principle, has been installed.

The air is exhausted through grilles in the floor instead of being drawn out at the back as in the more conventional types. This means, as a practical matter, that two sides of any part can be painted simultaneously. Such double action is impossible where paint laden air rises past the material and the worker must therefore turn the item completely around if it is to be painted on the opposite side, or walk around it—all of which is time consuming.

Good Storage—Sufficient storage

and aisle space in the new plant contribute to more efficient production, better safety methods, and smoother traffic flow. Employees who are not asked to work amid the handicaps of cramped space are in a better frame of mind.

The new plant provides several points of storage with the main storage area for sheet steel centered at the crane-serviced area of the north end. This is close to the truck dock and degreaser and is adjacent to the first operation in the manufacturing process. There is now no overflow of stored sheet steel into production areas of the factory, for this storage area provides space for ample inventories required to minimize the effects of shortages.

Ready to Expand—Built-in provisions for expansion are a feature not only of the master plan development, but also of the first unit in that program. Wood "knockout" blocks are built into the floor at points where machines may logically be added to meet the needs of company growth.

The entire east wall may be demolished for plant expansion, with structural members of the factory

planned to accommodate this expansion, and with crane bay and storage areas following a logical arranged growth. Expansion may be to the south, and general offices may be added to the north, still retaining the balance of landscaping, parking areas and roadways.

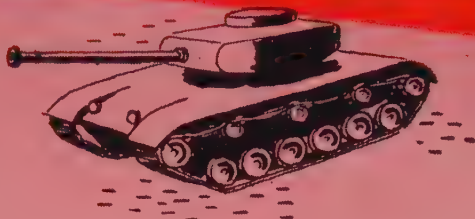
Unit Heating — Installation of an expensive boiler room and stack was avoided by using thermostatically controlled ceiling mounted unit heaters. These may burn either fuel oil or gas, but at present are oil-fired, supplied from an underground tank of 20,000-gallon capacity. Truck docks are all-weather enclosed at both the shipping and receiving departments. Depressed truck ramps put beds level with factory floor.

The unit's conformance to a master plan, its ability to be expanded readily to meet future needs of company growth, its flexibility to change of manufacturing processes within its walls are all features gained by Binks because of the company's willingness to co-ordinate its own thinking with the study, insight and experience of specialists.

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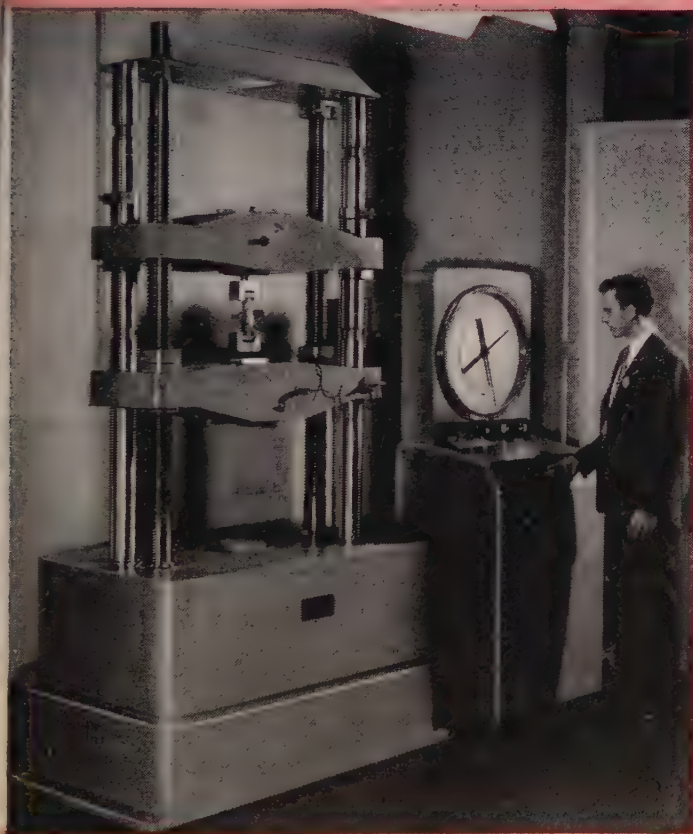
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Tension test in progress on Riehle 120,000 lb. Hydraulic Universal. Photo courtesy of Cleveland Tank Plant, Cadillac Motor Car Division, General Motors Corporation.

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New 1200-ton blast furnace showing modern uptakes and gas cleaning systems

Largest Stack in Great Britain Blown-in

Slag from new blast furnace is tapped into pits for the first time in Great Britain. Second 27-foot stack now under construction

APPROXIMATELY half a million tons of steel capacity has been added to the production of Great Britain by new facilities at the Hawarden Bridge steelworks of John Summers & Sons, Ltd., Shotton, near Chester in the northwest of England. The plant is now in full operation.

For the first time in its history, the firm now is producing its own pig iron. The blast furnace with a 27-foot hearth is claimed to be the largest outside the United States. When operating on high-grade foreign ore, production is 1200 tons per day; with home ore of low iron content daily output is around 1000 tons. The furnace is

built for eventual high-top pressure operation. For the first time in Great Britain, the slag is tapped into pits instead of in ladles.

Two batteries of 44 Simon-Carves coke ovens, having an output of 8000 tons per week, supply the furnace fuel, which is screened before charging. Coking coal is treated in a Robins-Massiter blending plant which is claimed to be the first equipment of its kind installed in Europe.

Iron ore is brought to the works in company-owned 50-ton bottom discharge hopper cars. One conveyor belt moves the ore to the crushers, and another takes it to power operated trucks which trans-

fer it either to the furnace bins or to the stockyard.

Hot metal is carried from the blast furnace in ladles to two 1200-ton mixers fired with coke oven gas. Operation of the eight 150-ton open hearths is under instrument control. Each furnace is rated at 2000 tons per week when operated on hot metal. A central boiler house and steam generating plant, and a central water cooling system serve the fully integrated plant.

Foundations are being laid for a second blast furnace with a 27-foot hearth diameter; a sintering plant is under construction and additional coke ovens and open hearth furnaces are also planned.

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AJAX

TAMA-WYATT

Induction Furnaces—

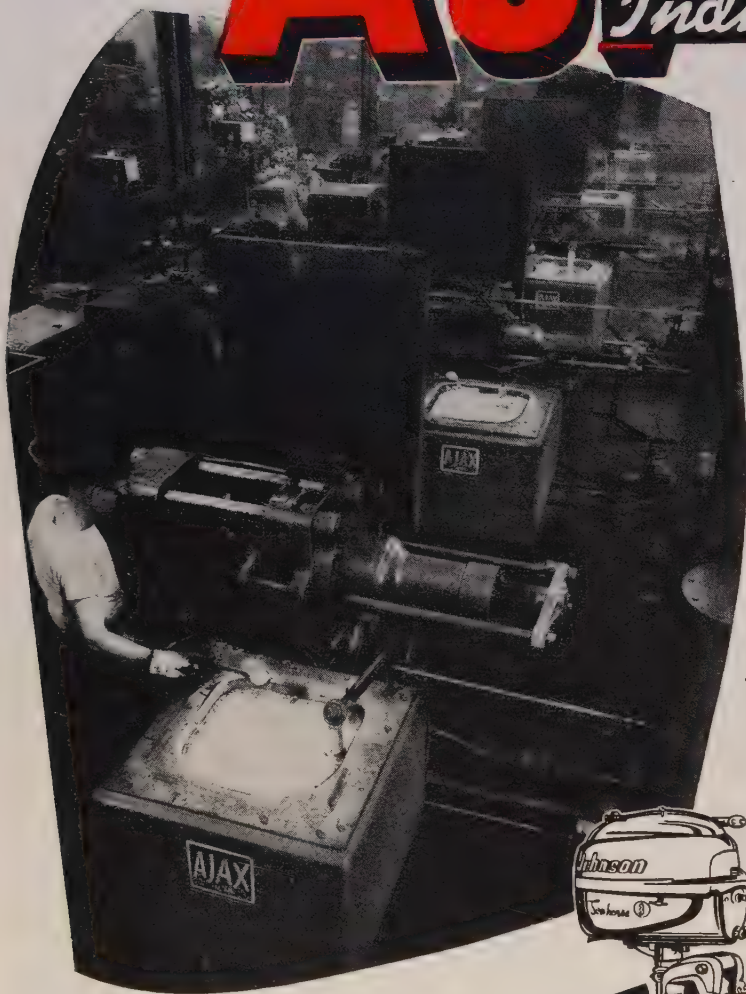


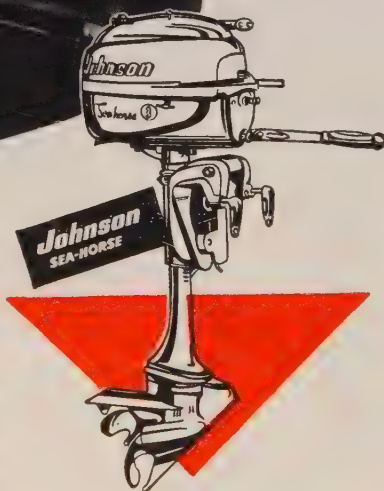
Photo shows a part of the Aluminum Alloy Die casting Shop at Johnson Motors.

help
Johnson Motors
produce
millions of
aluminum alloy
die castings
per year

Johnson Motors, Division of Out-Board & Marine Mfg. Co., Waukegan, Ill., has the largest aluminum die casting plant in the world using exclusively electric furnaces for melting and holding the metal to be processed in die casting machines for the production of outboard motors.

"The best holding furnaces for aluminum die casting machines are considered to be electric induction furnaces. Where ingot is being added directly to the furnace for die casting, this is the only furnace on which there is little possibility of sludge formation at the bottom. The reason for that is obvious. The heat is where it belongs, down at the bottom of the furnace in the metal. Also, the agitation due to the internal electrical stirring, which has no effect on dross inclusions, gives the best conditions for holding furnaces (for either die casting or permanent molding), especially if it is desired to add pig directly to the furnace."

From answer to "Quizmaster" question, provided by technical service staff of Federated Metals Div., American Smelting & Refining Co. in March 1953 issue of American Foundryman.



AJAX Induction Furnaces have proved most satisfactory for this concern because they have automatic temperature control, gentle movement of the metal (which prevents segregation), and amazingly low maintenance cost. Some furnaces have been operating for as long as 7 years without renewal of refractory lining.

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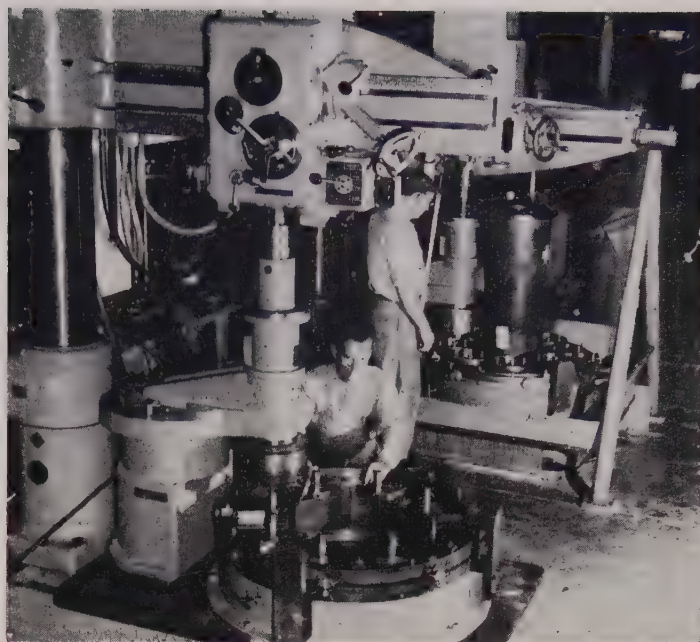
TAMA-WYATT



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AJAX ELECTROTHERMIC CORP., Ajax Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., INC., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax-Wyatt Induction Furnaces for Melting

Fixture Multiplies Drill's Capacity

Two-part unit amounts to a special boring machine driven by a radial drill. Bed rotates on roller bearings for part index. Workpieces are aft frames for jet aircraft engines



Special fixtures with rotating beds speed up the machining on the jet engine aft frames. The boring head on the fixture is driven through a shear pin by the radial arm drill

INGENUITY applied to jigs and fixtures offers substantial savings in both machining time and cost of the operation.

By harnessing a fixture to standard machine tools, the engineers at Ryan Aeronautical Co., San Diego, Calif., have saved thousands of manhours and avoided large capital outlays.

Complex Job—Work involves the precision boring, turning, facing and undercutting of flanges which support combustion chambers in the aft-frame sections of General Electric J-47 jet engines. Each large aft frame contains eight eyelets and flanges which must be machined to tolerances of 0.005-inch and finishes of 63 microinch rms. Made of tough welded stainless steel, the frame is an unwieldy structure with closely-spaced flanges rimming its periphery.

To perform the exacting machining specified would have entailed either boring mills and tooling costing \$40,000 each, or specially-built machines, equally expensive. With the boring mill, the work would have to be accomplished in four steps involving eight precision setups and about two days for each component.

Heavy Savings — Special boring fixtures were built at a cost of \$13,000 each and attached to the radial-

arm drills, costing about \$9000, so the total investment for each machine tool is about half of that otherwise required.

More important is the fact that each aft frame can be machined in only two hours with the fixture. That's a saving of nearly 90 per cent in the manhours required by the other method.

Roughs and Finishes — Fixture consists of two units—a boring head and holding fixture. The vertical spindle of the boring head is actually a shaft within a shaft and is attached directly to the radial drill by means of a shear pin.

At its other extremity it is fitted with circular cutting head which holds four sets of dual carbide-tipped cutting tools. Each pair includes a rough and a finish cutter.

The holding fixture is a heavy cast iron assembly which rigidly holds the aft frame and rotates on ball bearings to permit indexing of the unit.

No Overlap—Using the radial drill as a source of power and feed, the boring head spindle rotates and descends, automatically, bringing the cutting head into contact with the flanges. The first pair of cutters bore the inside diameter of the flange.

When this operation is completed,

the further descent of the head brings the second cutters into action to turn the outside diameter. Care is taken to insure that these machining operations do not overlap and interfere by vibration.

Timing Sequence—When the turning is accomplished, the outer shaft descent is stopped by a pilot and the inner shaft continues to descend. This actuates bell cranks which move a third pair of cutters, horizontally, to face the top of the flange. Then, the last cutters are brought into play, by cam action, to undercut the flange on a bevel.

Since each operation of the sequence follows in rapid order, exact timing of the action is necessary. This is obtained by a special system of timing pins which are grooved into the shafts to co-ordinate the motion of the parts.

Cycle is automatic and the operator is required only for loading and unloading the machine and indexing the aft frame. Swinging cranes, with air-operated hoists, are located at each machine so one man can perform the loading.

The radial drill arm and boring head are easily swung to one side to allow room to load the holding fixture. Water-soluble oil is pumped to the cutting head, from a collecting reservoir, to remove heat generated by friction.

The SURE Way



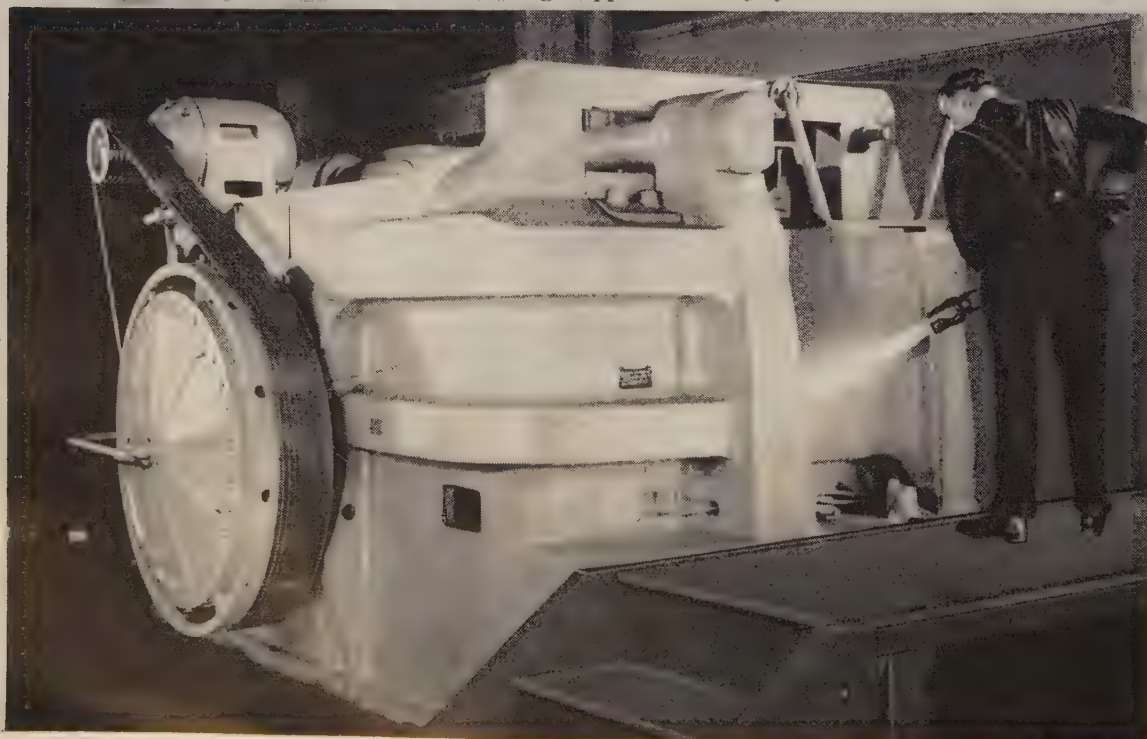
YOU can get into production quickly on high explosive shells if you use the tried and proved (1) National-pioneered progressive piercing method and (2) National forging machines — *the right method and the right machine.*

All operations are done on one machine, on one heat, by a single operator with no special skills. The result is a forging having a cavity finished

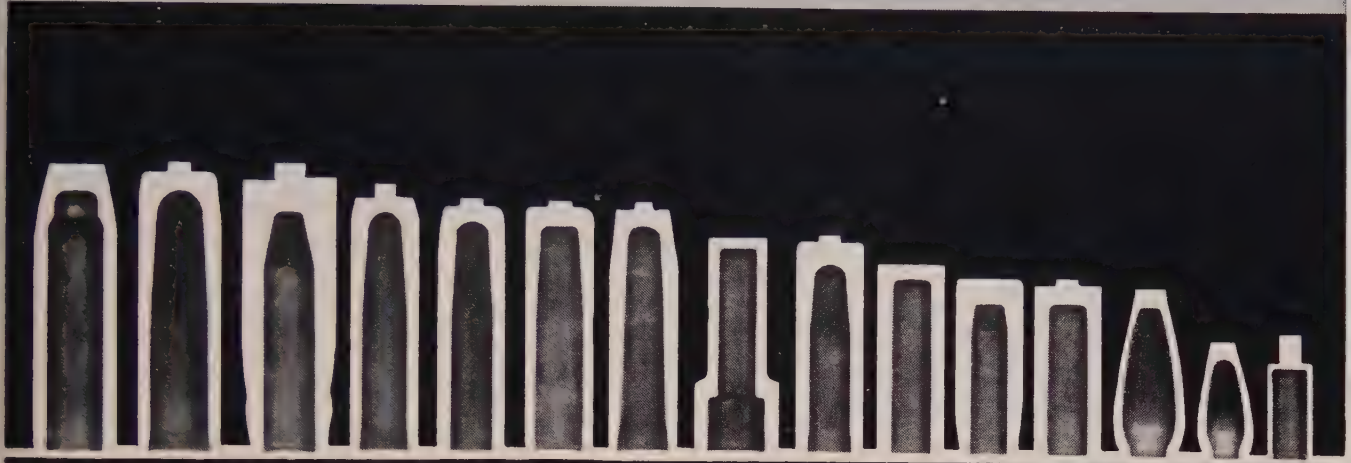
to size and possessing excellent concentricity. Only minimum machining is required on the shell exterior.

A high production rate is attainable from the beginning, without multiple-stage operations involving excessive handling, annealing and coating, and without the need for scarce steels.

This 4" High Duty Forging Machine, tooled to forge the 75 mm. high explosive shell, is one of the many NATIONALS which are being shipped these days for shell work.



to Forge Shells!

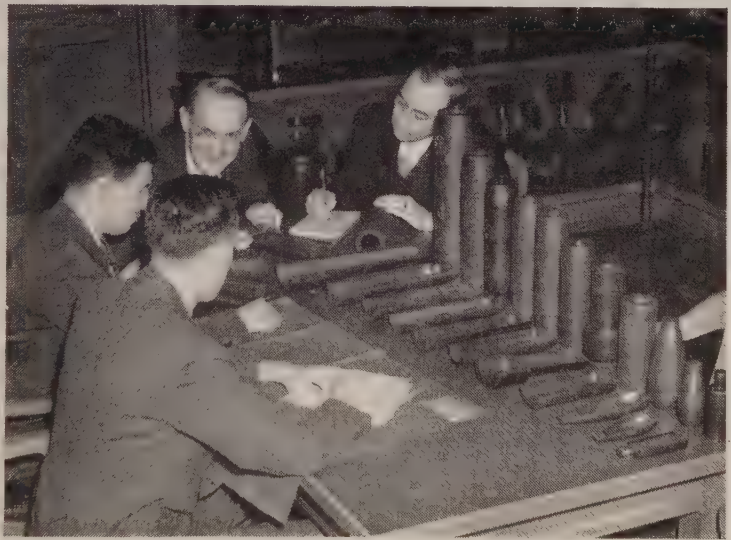


Here are a few shell forgings produced on National High Duty Forging Machines in dies designed by National engineers.

Rugged, dependable National High Duty Forging Machines are designed for the exacting demands of shell work. The NATIONAL'S basic rigidity is vital for accurate die match. The exclusive diaphragm clutch insures round-the-clock trouble-free operation, year-in and year-out.

National engineers, with years of experience in all phases of shell forging, have tooled hundreds of High Duty Forging Machines for all types of deep-pierced ordnance jobs.

Whatever your problems, our forging engineering is at your disposal. Send us a print or sample of your jobs, or, better yet, pay us a visit, without obligation.



Shell forgers get assistance with their problems by working with National engineers.

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Iron Notch Used to Blow-In Blast Furnace

Applying blast through taphole reduces blow-in time. Combining drying-out and blowing-in periods wins wide acclaim of furnacemen because of time saving and conservation of refractories

Importance of beneficiation of low grade ores, treatment of taconites and blowing-in procedures were stressed at the 36th conference of the Blast Furnace, Coke Oven and Raw Materials Committee and National Open Hearth Committee of the American Institute of Mining & Metallurgical Engineers, Statler Hotel, Buffalo, April 20-22. Highlights of various papers presented follow:

Method of Blowing-In Blast Furnace from Bank, by W. W. Durfee, United States Steel Corp., Lorain, O.

Since 1946, when returning a banked furnace to blast, Lorain has followed the practice of blowing into the iron notch. The same procedure is followed when blowing in a furnace from which the salamander has not been removed. The notch is quarried straight back to loose coke, the cinder notch is bricked up, the main skimmer removed, and the tapping hole made up with a 5 foot length of 4 inch pipe. One half of a ball-point has been welded to the outer end of the pipe, which is positioned so that the joint is flush with the face of the hole. An assembly of 4 inch pipe, starting with a special flange that replaces the peep-sight flange on the tuyere stock and terminating with the other half of the ball-joint, is positioned and blocked in place. Included in the assembly are a 4-in. valve and a section of flexible steel pipe. The section of flexible pipe in the assembly great-

ly simplifies the piping and facilitates its withdrawal.

The tuyeres where an early opening is anticipated are clayed up and the others, including the one at which the blow-in pipe is located, have a brick wedged near the nose of the tuyere in order to offer more resistance to opening by the blast pressure. The blower is set to deliver 20,000 cfm and the volume of blast entering the hole is controlled by regulating the snorter to give a bustle-pipe pressure of 10 to 15 psi. When available, a blast temperature of 1100° F, as recorded in the bustlepipe, has been used.

After blowing into the hole has been carried on for approximately 6 hours, the tuyeres in front of the furnace are opened, one at a time, and blast volume is in-

creased to hold the 10 to 15 psi blast pressure. Between 8 and 12 hours after blowing is started, the head of metal and slag in the furnace becomes sufficient to start a flow back into the 4-inch pipe. When this occurs, as indicated by color in the pipe, the blocking is removed, the pipe withdrawn, and the 4-inch valve closed. Withdrawal of the pipe is followed by a run of metal and slag, usually to the extent of only a stub ladle. The tapping hole is opened every three hours until the temperature of the slag warrants replacement of the main skimmer.

Tuyeres are opened from the front to the back on each side of the furnace as fast as conditions warrant. When any slag in front of the tuyeres is observed to drain at cast time, the adjacent

OFFICERS FOR 1954

Blast Furnace, Coke Oven and Raw Materials Committee

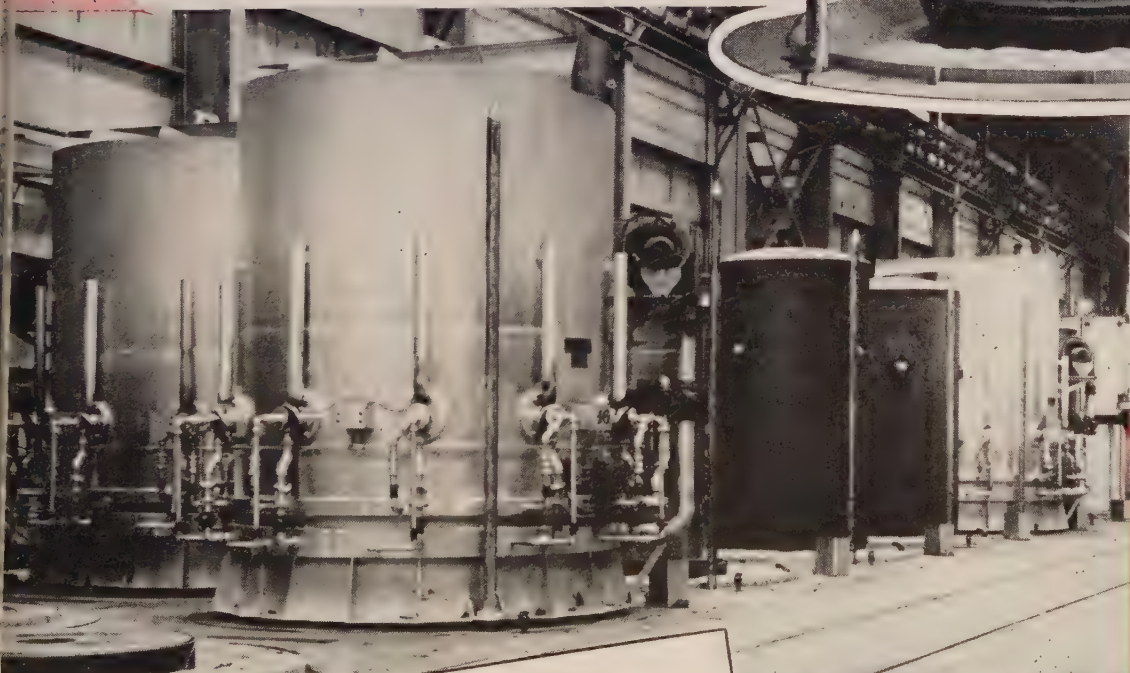
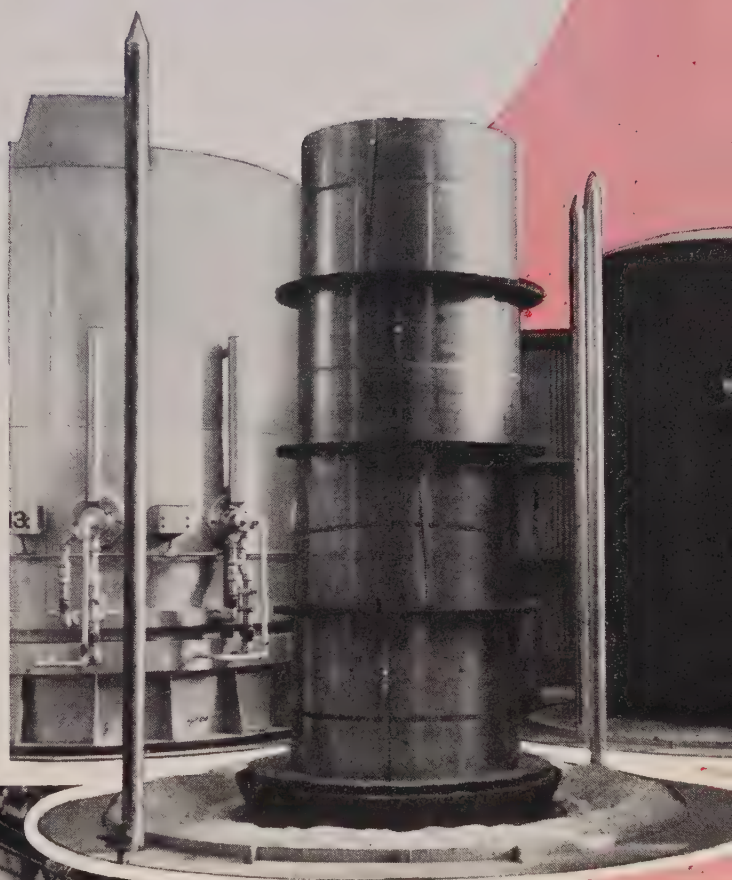
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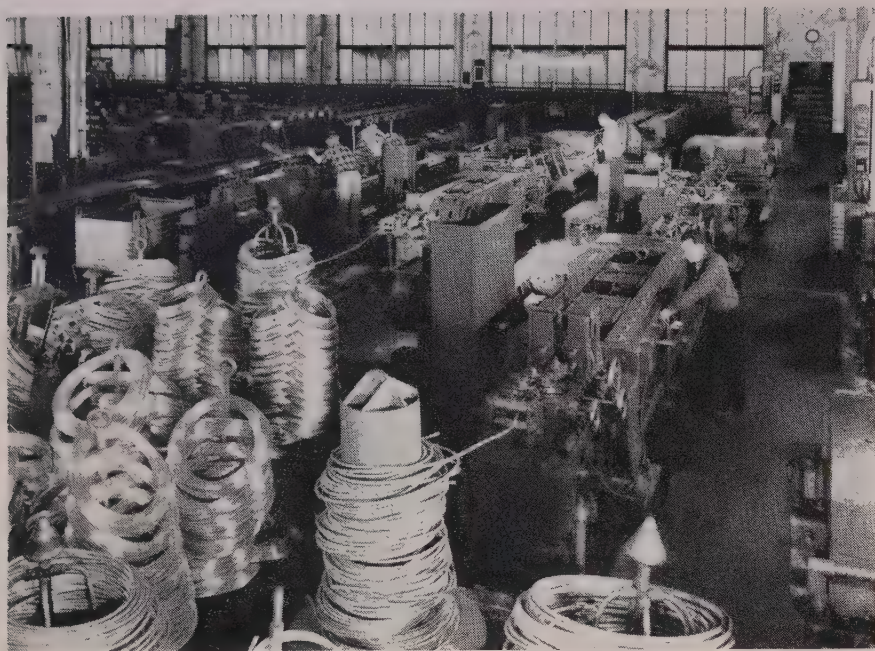
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Part of the mill improvement program of American Brass' Torrington, Conn., works is this machine which produces finished rod in diameters from 3/32 to 7/8-inch. One continuous operation draws, cuts to length, straightens and polishes rods at speeds up to 140 fpm. Each used to be a separate operation

tuyeres are opened. Ability to get the tuyeres open early during the blow-in is a distinct advantage in obtaining uniform stock movement and getting the furnace on quality iron.

Departure from the procedure has consisted in admitting oxygen into the blast entering the tapping hole, or in blowing it into the hole for a longer period before opening any tuyeres. A distinct benefit may be realized from the oxygen when starting with cold stoves.

By following the method described, which is substantially converting the tapping hole into a tuyere, the time of returning a banked furnace to 80 pct normal blast has been reduced from approximately 72 hr to 30 hr.

The foregoing procedure is followed at another corporation plant with this exception: the gases instead of being exhausted out the top of the stack are exhausted through the cinder notch. This is done by adjusting the bleeder to control the pressure.

Blast Furnace Blowing-In and Drying-Out Practices at Bethlehem Plants, by H. M. Kraner, Bethlehem Steel Co., Bethlehem, Pa. In speaking of carbon re-

fractories in the blast furnace, the author stated that the use of clay brick between carbon block walls and the coolers is on the decline.

Every effort is made to prevent oxidation of carbon during drying and blowing-in. Carbon generally is protected with 9-inch clay brick bonded with air-setting cement as an air seal, and this wall extends in most cases to the mantle. As a double safeguard we aim to hold air temperatures below 800° F, above which temperature serious damage is done to any carbon sections.

Use of thermocouples in drying furnaces is being extended as it is realized that serious damage has been done to linings during the drying and more particularly during blowing-in.

Premature hearth breakouts have occurred over the years and recent observations point to drying and blowing-in practices as the cause. No normal blast furnace brick will stand heating at rates faster than 200° F per hour. Heating rates below 200° F per hour do not appear to be too severe for either wet or dried brick. We have not found a wet brick to be any more sensitive to heat shock

than a dry one—in other words, a wet brick can be heated safely within the rates (100 to 200° F per hour) allowable for dry brick.

One steel producer combines his drying and blowing-in period. This seems more advantageous from the standpoint of saving time and is more favorable to the refractory than a practice which separates drying and blowing-in, for a continuous method which would use a conservative heating rate of 100° F per hour would bring the furnace up to operating temperatures faster than is now done with two separate periods of heating and blowing-in.

Preheating and Blowing-In Practice at the Blast Furnace, by R. J. Wilson, Inland Steel Co., E. Chicago, Ind. The stack is dried out for 6 to 8 days at a maximum blast temperature of 1000° F. The hearth, bosh and 30 per cent of the working volume of the stack are filled with coke. A large slag volume, ore, coke and stone to flux them are next charged until half of the working volume of the furnace is filled. A series of filling then is started and continued until the stack is filled 12 feet from the closed big bell. With all normal size tuyeres open, 10,000 cfm wind is put on the furnace and the tapping hole is blown for about 12 hours.

After 6 hours, the rate of wind is increased 1000 cfm every hour until 80 per cent of normal volume is being blown. Particular emphasis is placed on the stone required to bring the sulphur in the iron into the desired range as the silicon is lowered.

Experimental Smelting of Charge Ore Agglomerates in a Low-Shaft Blast Furnace, by H. Kay, Pittsburgh Consolidated Coal Co., Library, Pa. An agglomerate was smelted in a closed top foundry cupola having a 3-foot diameter hearth. A blast enrichment up to 25 volume per cent oxygen was used in the absence of air preheating. The smelting area was based on the square foot hearth area approached but did not reach current successful commercial blast furnace practice.

It was concluded that smelting capacity is to a large extent a function of the rate at which reducing gas can be blown effectively

BULLARD**MANUFACTURERS OF MACHINE TOOLS**

Construction of Grand Coulee Dam

Wide World Photo

The Invisible Background of Industrial Progress

The influence of an engineering project such as the Grand Coulee Dam reaches far into many diversified industries. Located on the upper Columbia River in the state of Washington, this Dam covers 35 acres of land with its 25,000,000 tons of solid reinforced concrete. Such developments as this provide flood control, irrigation of previous waste lands, generation of power, increased employment and many other benefits that are plus factors in our American economy.

Construction of these huge projects requires many varied types of equipment as well as the numerous internal electrical, hydraulic and mechanical components, for which machine tools are the key manufacturing units.

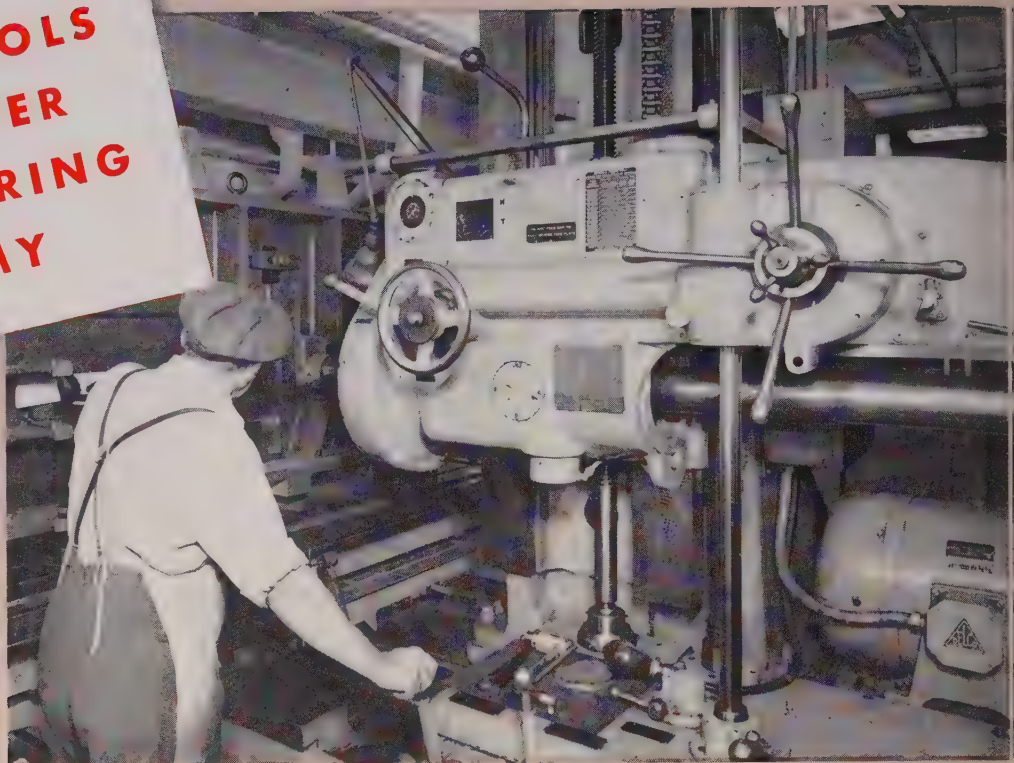
★ The Bullard Company, builders of *Modern Machine Tools*, have consistently engineered and developed key manufacturing units for our American industries.

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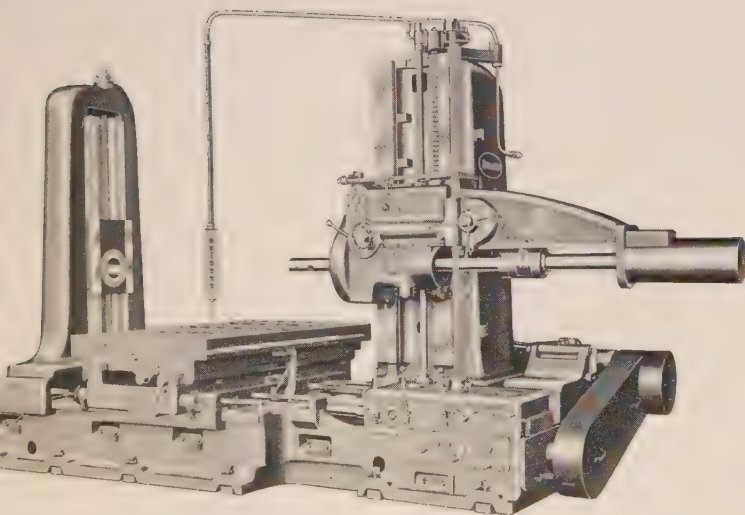
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THE BULLARD COMPANY BRIDGEPORT 2, CONNECTICUT

ly through the burden without lifting or hanging. Other capacity limitations, such as carbon reactivity or rate of heat transfer do not appear to be controlling in the range of blast rates studied.

The Consolidated Coal Co. prepared tonnage quantities of an agglomerate of coal and fine ore. This low-temperature char-ore agglomerate (called Ore-Disco) was first tested over a 30-day period in a commercial blast furnace. This agglomerate interfered with furnace operation to the extent that its continued use in the conventional furnace was not considered feasible. A return to a smaller scale equipment gave evidence of the suitability of this material as a charge to a modified cupola.

Discussion brought out the following information on the foregoing paper. About 5000 tons of the agglomerate was charged into a 1200-ton blast furnace near the Pittsburgh district in the proportion of 4 to 8 per cent of the burden. Because of disrupted operations the test was discontinued. It was emphasized that the low shaft furnace is not a miniature blast furnace, but merely lends itself to a different technique. The top gas from the low shaft furnace has a heat value of 150 Btu. Use of too much wind will blow the charge out of the top. Lacking cheap oxygen the low shaft furnace might tolerate a lower thermal efficiency only where an inexpensive burden is available.

A low shaft furnace in Bavaria operating on a ferrochrome burden is blown with air enriched up to 72 per cent oxygen. A report also is current that a 2000 ton per day steel plant, which will use low shaft furnaces, is under construction in East Germany.

Beneficiation of East Texas Iron Ores, by W. R. Bond, Vice President operations, Lone Star Steel Co., Lone Star, Tex. Transportation of ore is a major problem. From 2½ to 10 tons of material must be hauled to furnish 1 ton of finished ore and the length of hauls ranges from 1½ to 12 miles. A few years ago limonite ore was treated in the rotary kiln to dry it and to drive out the water of crystallization and thus raise the grade. The ore simply changed

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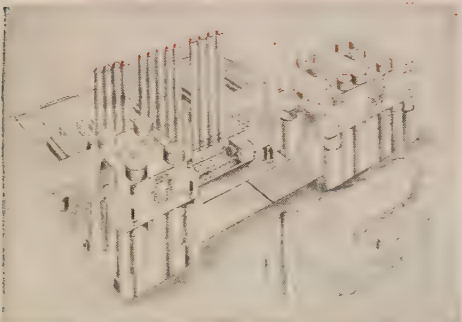
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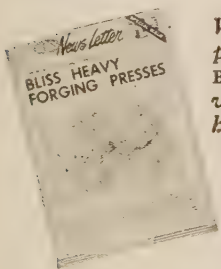
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Twin Press Set-Up: Schematic shows how Bliss' 35,000 and 25,000-ton presses will be installed.



Write for the twelve-page Special Issue of the BLISS NEWS LETTER which describes the Bliss heavy presses in detail.

And it's in the machining stage now...

Bliss is building this press and another, its 25,000-ton teammate, for the critical USAF heavy press program—a program which promises to speed up production of the one-piece wing spars required by the stresses of sonic and near-sonic speeds.

Instead of today's time-consuming and costly machining of rough billets into single spars, these presses will allow Kaiser Aluminum to take a rough billet, give it a mighty multi-million pound squeeze and mold it into near-finished shape!

Just planning to build monster presses like these brings problems that stagger the imagination. To give you a quick idea: the size and weight of every major section had to be limited by the capacity of railroad rolling stock. In fact, in one case the main line of the Pennsylvania RR will have to be lowered five inches to allow under-bridge clearance for the largest of the press sections.

An unusual job in most respects, these presses nevertheless have one thing in common with all Bliss presses: the same creative press engineering. That's why Bliss, the world's largest press builder, always offers the right press—hydraulic or mechanical—for a given job, no matter what the capacity.

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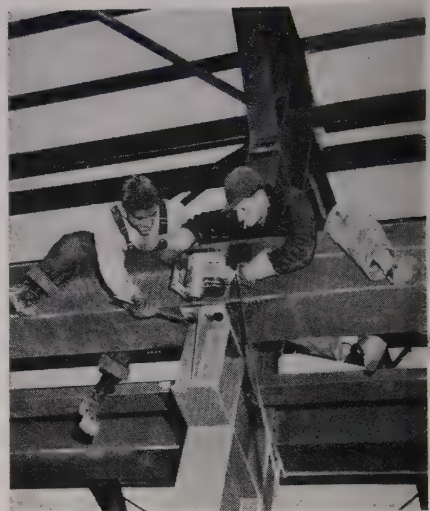
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Erection of this standardized Luria steel-frame structure was speeded by use of high-tensile bolts fastened with power-driven impact wrenches. A two-man team can insert 400 bolts per day with less equipment and fatigue.

to a porous hematite and the grade was raised from 42 to 47 per cent iron; silica and alumina remained about the same because the draft in the kiln carried away fine sand and clay as dust. About 7 per cent silica is eliminated in the kilns.

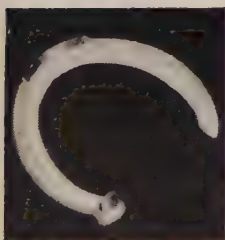
East Texas iron ores are easily reduced after being beneficiated and the furnace rated at 1200 net tons a day at 50.50 per cent Fe and 12 per cent SiO_2 is producing in excess of 1150 net tons from an ore containing from 44 to 47 per cent Fe and 18 to 22 per cent SiO_2 .

This is possible largely because of the porosity of the ore and the preparation it receives in the kiln, both of which make it easy to reduce, and because of the use of 20 to 25 per cent sinter. Use of these ores has opened a new era to a large section of Texas.

Reduction-Oxidation Process for the Treatment of Taconites, by Messrs Stephens, Lanston and Richardson, Battelle Memorial Institute, Columbus, O. The authors described a new process which combines a low temperature gaseous reduction step and a controlled reoxidation step with a direct heat transfer system to give a process that requires no external heat. The gamma hematite retains the cubic crystal structure and magnetic properties of mag-



Perfect Fit for a Filly



Another example of how Carpenter Application Engineering Service is working for industry

The average race track fan rarely gives a thought to the science that goes into pushing a winning horse across the finish line. The truth is that nothing—even down to the fit of a pony's shoes—

is left to chance. And you'd be surprised at some of the problems encountered.

The horseshoe shown here is a good example. The manufacturer was using SAE 1060 steel to make the toe and heel calks. But when the shoe had to be bent cold for an exact fit on the horse's hoofs, the toe calk broke too often because the SAE steel couldn't take the bend.

And that's where Carpenter Application Engineering Service went to work. The Carpenter representative demonstrated how Solar (Water-Tough) Tool Steel, engineered by Carpenter some years ago, will bend cold without breaking at a hardness of Rockwell C-58/60. Now, with Solar, not only is the breakage problem solved, but the life of a set of shoes more than doubled—going up from about three weeks to seven weeks!

Time and again manufacturers are finding new ways to make products work better, sell better, cost less . . . with the help of Carpenter Application Engineering Service. A.E.S. goes to work as soon as you get in touch with your Carpenter Mill-Branch Warehouse or Distributor. Isn't it worth a try? THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.



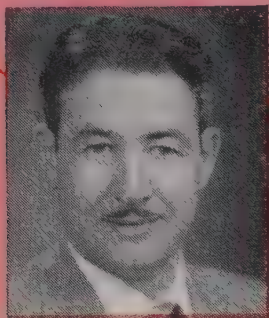
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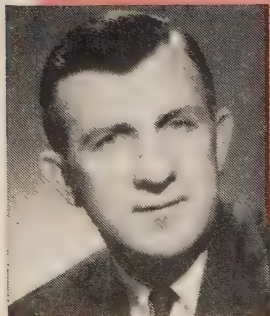
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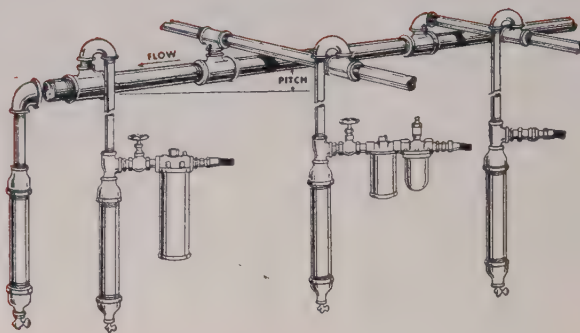


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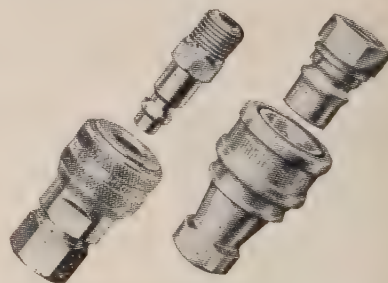
By the very nature of his job, the Hansen representative is thoroughly familiar with practically every type of air line hook-up. He knows what works—and why it does. Frequently, the remedy for your difficulties, drawn from his experience in dozens of plants, is very simple.

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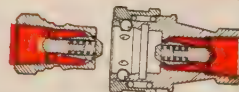
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Handling steel, aluminum, axles, tubing and machinery at Trailmobile Inc., Cincinnati, has been simplified with the help of this 15-ton Lorain self-propelled crane. Here it is unloading lengths of angle steel from an open trailer, one of many material handling jobs performed in the receiving area

netite, thus making it feasible to separate the iron values from the gangue by normal magnetic separation procedures.

Tests with a 2-foot diameter shaft furnace show the process is applicable to a wide variety of taconites, including mixtures of hematite, magnetite and siderite. Where other processes require 3 or more tons of ore for the production of 1 ton of concentrates, this new process needs only 2 tons and fine grinding costs are decreased by two-thirds. The savings in mining and grinding costs should more than offset the cost of roasting the ore.

Based upon the findings of the authors, an eastern furnaceman estimated the operating cost of treating 1 ton of ore in a reduction-oxidation furnace would be \$0.5568 including producer gas, labor, power and maintenance. He also estimated the cost of reducing 1 gross ton of pellets in the reduction-oxidation furnace and magnetic separation would be \$7.55, mines; and the value at the mines of \$8.98, or an indicated profit of \$1.43. These costs, he explained, are within practical operation.

Quality Control of Blast Furnace Flue-Dust Sinter, by Messrs Rudolphy and Carney, United States Steel Corp., South Works, Chicago. From initial production trials of sinter the authors conclude that the cooling rate of sinter affected the sinter strength, the slow cooled sinter being strongest. The reducibility of sinter was governed partially by particle distribution, porosity, and the nature of the bond of the sinter. They reported that fayalite was found in sinters of all strengths. It does not appear to retard reduction and was not reduced in testing. From a study made with experimental samples, temperature is more important in the formation of fayalite than excess amounts of silica. Increased carbon in the sinter feed showed increased strength in the resultant sinter. For normal production sinters, as the median strength of the sinter increases, the time required for 90 per cent reduction was increased proportionally. Increased carbon in the sinter feed increases the strength of sinter. Coarse particles within a sinter sample reduce at a slower rate than finer particles.

quality. However, very severe draws are possible with this metal, some examples being washing machine tubs, bath tubs and sinks, all of which are produced in a single drawing operation.

Superior Enameling—The enameling properties of this metal are good, and definitely superior to those of mild steel. This is due to the lower percentages of carbon and manganese present in the metal, as referred to above.

Resistance to sagging and warping is also superior to that of mild steel. Relatively low percentages of carbon and manganese give this metal only one thermal transformation point—approximately 1600° F, which is above enameling temperatures. Parts fabricated from enameling iron tend to be much truer to shape than similar parts fabricated from mild steel.

Special Steels—Introduction of enameling iron some thirty years ago was of tremendous importance to the enameling industry. However this improved base metal still left something to be desired; there was still more warping than desired; there were more enamel re-operations than desired; and white enamels could not be applied satisfactorily to the metal.

The matter of applying white enamel directly to base metal has been the subject of research for many years, because such a finish would reduce shop costs and the thinner coating would be less susceptible to cracking and chipping.

Substitutes Developed — Many white ground coats were developed in an effort to obtain thinner enamel coatings. Special pickling and nickeling processes designed to make obtainable a single white coat finish show a noticeable advancement in the art but as yet have not been applied to large scale production.

Titanium-steel alloys is one approach to this problem. This basic open hearth product contains sufficient titanium to combine with the carbon and has a typical analysis of:

Carbon	Manganese	Phosphorous
0.05%	0.30%	0.010%
Sulphur	Silicon	Titanium
0.030%	0.10%	0.30%

Though not a perfect base metal,

10

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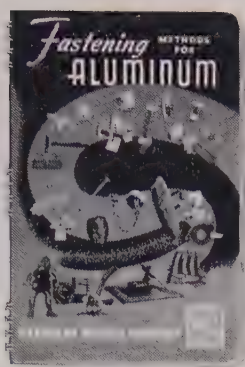
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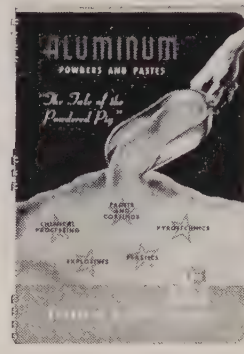


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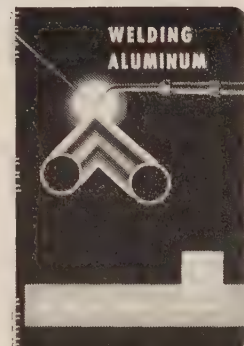
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Cost of stoking and maintaining furnaces at this Michigan plant exceeded budget until this Clark truck with shovel attachment went to work. Metal is transported from storage to boiler despite cramped working space

They have proved to the industry that good single coat finishes are available and that there are basic economies with their use.

Superior Workability — Drawing quality of this metal is superior to that of enameling iron, but slightly inferior to that of the best drawing mild steel. Its yield strength is comparable to that of enameling iron. There are also several interesting enameling properties of this metal.

White cover coat enamels can and are being applied directly to the metal with good success. The titanium oxide enamels work well in a single coat and produce a finish having satisfactory reflectance at an enamel thickness of 0.004-inch thickness although production shops aim for about 0.005 to 0.006-inch for a single coat.

Another interesting property of this metal is its comparatively high strength at enameling temperatures. Recent data show almost twice as much stress required to produce a total deformation of 3 per cent in one minute at enameling temperatures for this metal as compared to enameling iron. This property helps explain the good resistance to warping, sagging and fairlining of parts that are fabricated from it.

From a paper presented before the Porcelain Enamel Institute Forum

Zinc Coating Guaranteed

Granite City Steel Co. announces that its galvanized corrugated steel roofing product known as Strongbarn will now be regularly supplied to the standards set up by the American Society for Testing Materials as covered by Specification A-361-52 T covering "1.25-ounce Zinc Coated Roofing Sheets."

This is in keeping with company policy to maintain their patented high strength galvanized steel roofing product in a quality classification and not to confuse it with the regular commercial coated roofing sheet. Commercial sheets do not have any guarantee of the amount of zinc coating weight.

Importance of a minimum standard of zinc coating relative to the life of galvanized steel roofing sheets has long been known and this is the first time a manufacturer has been willing to offer assurance that their product would be produced to such detailed standards as covered by this specification. Heretofore, any such requirements would necessitate an extra charge for specific zinc coating.

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More than 300 technical case histories and general information articles on industrial instrumentation, covering all of the major industries, are listed in a special alphabetical index published by the Industrial Division, Minneapolis-Honeywell Regulator Co.

Covering editorial content in the firm's quarterly publication, "Instrumentation," from 1942 through 1952, the index describes instrumentation and automatic control applications in such industries as steel, petroleum, chemical, etc. Plant installations in some 162 industrial firms are described in the case histories ranging from the application of industrial instruments on huge catalytic cracking units to the utilization of automatic control equipment in the manufacture of plastic harmonicas or treatment of waste pickle liquor.

Index can be obtained by writing to Minneapolis-Honeywell Regulator Company, Industrial Division, Wayne and Windrim Avenues, Philadelphia 44, Pa.

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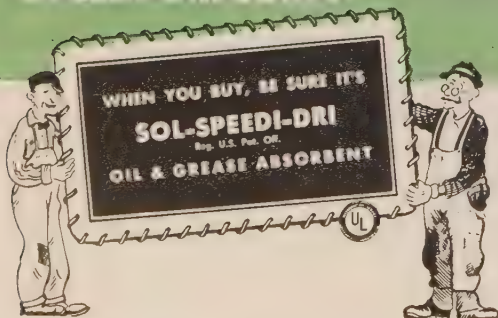


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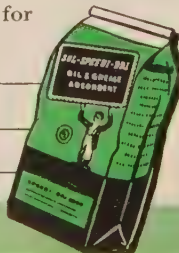


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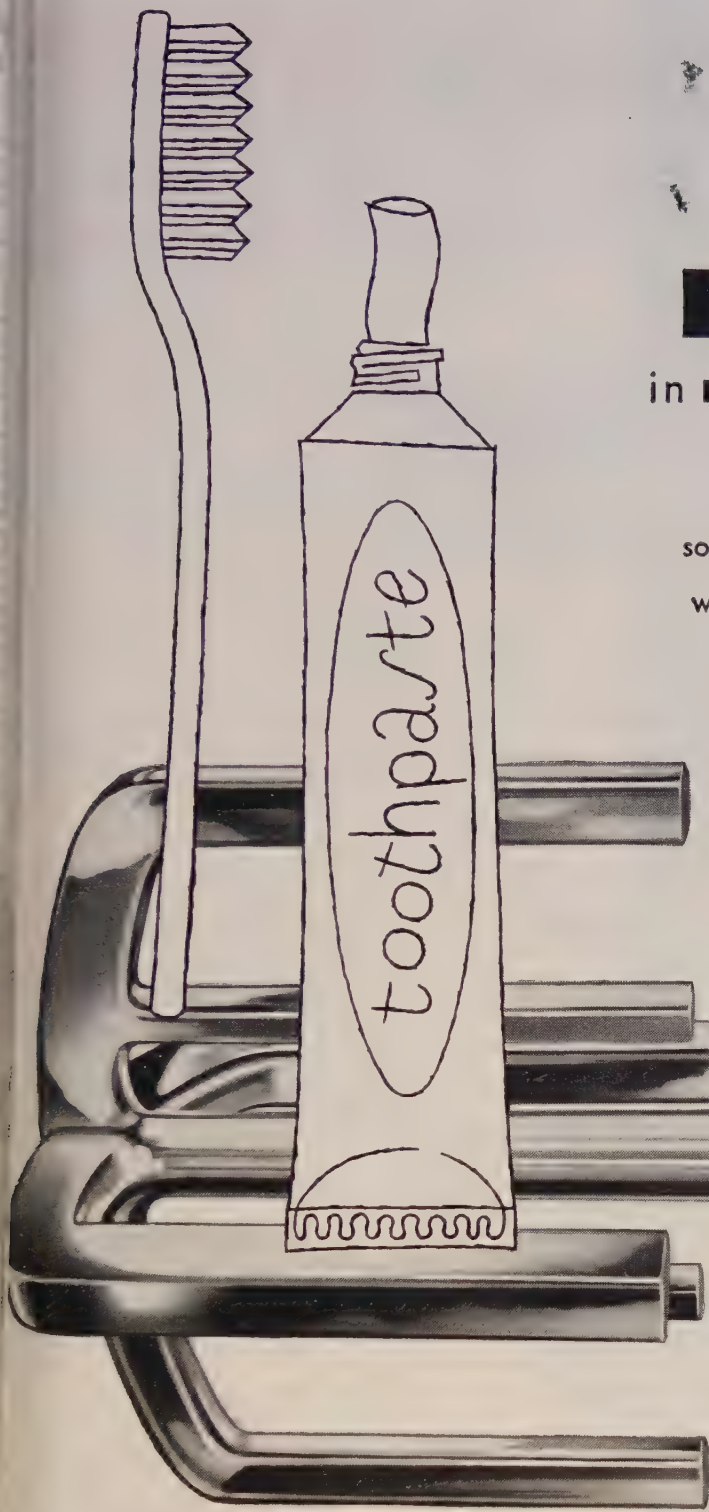
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CALENDAR OF MEETINGS

- June 1-13, National Metal Trades Association:** Plant management conference, Houghton Lake, Prudenville, Mich. Association address: 549 W. Randolph St., Chicago. Secretary: Louie W. Silvis.
- June 4-6, Steel Kitchen Cabinet Manufacturers Association:** Annual meeting, The Grubier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.
- June 7-12, Society of Automotive Engineers:** Annual summer meeting, Hotels Ambassador and Ritz-Carlton, Atlantic City, N. J. Society address: 29 W. 39th St., New York. Secretary: John A. C. Warner.
- June 8-9, Malleable Founders Society:** Annual spring meeting, The Homestead, Hot Springs, Va. Society address: 1800 Union Community Bldg., Cleveland. Secretary: Lowell D. Riddle.
- June 9-12, National District Heating Association:** Annual meeting, Hotel Lookout Mountain, Chattanooga, Tenn. Association address: 827 N. Euclid Ave., Pittsburgh. Secretary-treasurer: John F. Collins.
- June 11-12, Machinery & Allied Products Institute:** Washington conference, Statler Hotel, Washington. Association address: 1202 LaSalle St., Chicago 3. President: W. W. Kelley.
- June 12, Eastern States Blast Furnace & Oven Association:** Annual spring meeting, Edgewood Country Club, Pittsburgh. Secretary-treasurer: H. C. Cox.
- June 14-19, National Association of Cost Accountants:** Annual meeting, Hotel Statler, Los Angeles. Association address: 505 1st Ave., New York 22. Secretary: Arthur Gunnarson.
- June 15-18, Radio-Television Manufacturers Association:** Annual meeting, Palmer Hotel, Chicago. Association address: 777 14th St. NW, Washington 5. Secretary: James Secrest.
- June 15-18, American Electroplaters' Society:** Annual meeting, Benjamin Franklin Hotel, Philadelphia. Society address: 445 Broadway St., Newark, N. J. Secretary: D. G. Foulke.
- June 15-19, Basic Materials Conference:** Exposition: Grand Central Palace, New York. Information: Banner & Greif, New York.
- June 15-19, American Institute of Electrical Engineers:** Summer general meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.
- June 16-19, American Welding Society:** Annual spring technical meeting and western allied industry exposition, Shamrock Hotel and Hall of Exhibits, Houston. Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.
- June 17-19, American Management Association:** General management conference, Statler Hotel, New York. Association address: 33 W. 42nd St., New York.
- June 22-25, National Industrial Advertising Association:** Annual meeting, William Hotel, Pittsburgh. Association address: 10 Broadway, New York. Executive secretary: Blaine G. Wiley.
- June 22-27, Railway Supply Manufacturers Association:** Exhibit and convention, Atlantic City. Association address: 60 E. 42nd St., New York 17. Secretary: A. W. Brown.
- June 28-30, Alloy Casting Institute:** Annual meeting, The Homestead, Hot Springs, Minn. Institute address: 32 Third Ave., Minneapolis, N. Y. Secretary: E. A. Schoefer.
- June 28-July 2, American Society of Mechanical Engineers:** Semi-annual meeting, Statler Hotel, Los Angeles. Society address: 33 W. 39th St., New York 18. Secretary: C. Davies.
- June 29-July 3, American Society for Testing Materials:** Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society address: 1916 Race St., Philadelphia. Secretary: Robert L. Painter.
- July 6-17, Summer Course in Product Development:** Massachusetts Institute of Technology, Cambridge 39, Mass. Information: Director, Summer Session, Room 3-107, MIT.



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your free copy of our new booklet "Thirty Years of Progress." It will give you an inside view of our plant and its facilities and may help to illustrate how our experience and know-how can best serve your needs.

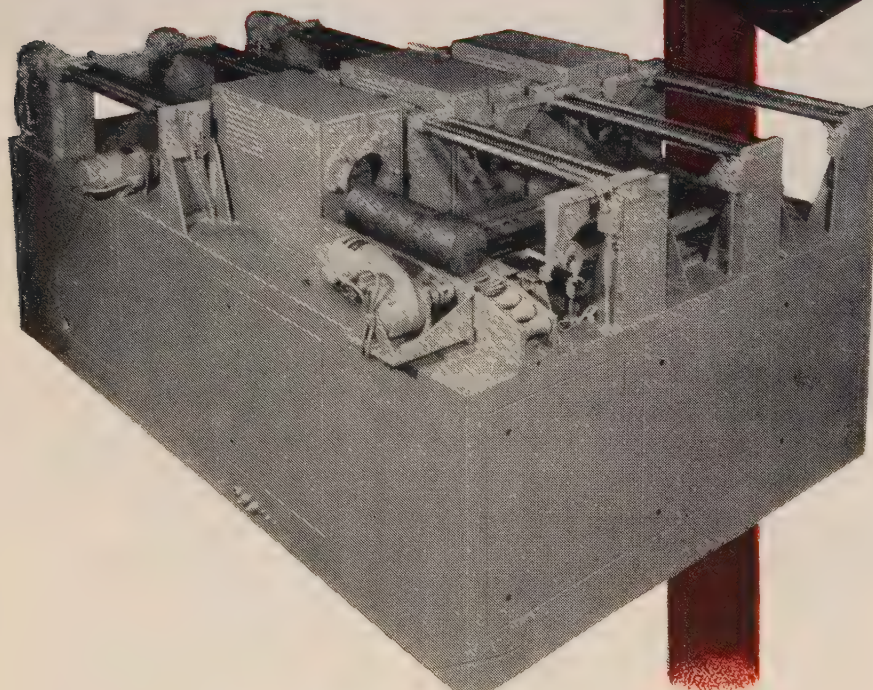
	COOPER ALLOY THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, N. J. Los Angeles, San Francisco, Oakland, Houston, Chicago, Detroit, Philadelphia, Hartford Leading producers of STAINLESS STEEL valves, fittings and castings
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the first
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universal....

BILLET HEATER

60-cycle

induction



THIS Loftus Universal Thermo-Induction furnace is the most flexible 60-cycle billet heater ever designed. You can heat every non-ferrous metal, in the same furnace, either consecutively or simultaneously, to its respective forging or extrusion temperature. The unit maintains

efficiency, constantly, even when heating short-length billets.

Loftus Thermo-Induction furnaces give you the most practical, dependable, and efficient method of heating non-ferrous metals.

achieve uniform heating in a matter of seconds. Production is continuous, and completely automatic. The press operator controls the furnace. Separate, positive control of each coil is at fingertips.

The Loftus 60-cycle Thermo-Induction furnace illustrated is designed to heat copper, aluminum, and cupro-nickel for extrusion and forging processes. The unit is readily adaptable for other uses. Possible, with this billet heater to heat 10" dia. Aluminum billet to 800° F., and brass billet to 1550° F., and a 10" dia. cupro-nickel billet to 1950° F. ALL AT THE SAME TIME IN THE ONE FURNACE. Each billet is heated independently . . . from a single control.



Send Today for Booklet describing Loftus 60 Cycle Induction Heating in Detail

Loftus

ENGINEERING CORPORATION

Designers and Builders of Industrial Furnaces

610 Smithfield Street • Pittsburgh 22, Pennsylvania



NEW

PRODUCTS and equipment

Reply cards on page 141 will bring you more information on any new products and equipment in this issue

Automatic Chucking Machine

... a larger capacity model

This single-spindle automatic chucking machine is a larger capacity model of the manufacturer's Type 1-AC. The unit features front and rear cross slides and a five-faced overhead turret. It handles work to 10½ inches diameter up to 48 inches in turned length. Triplocks are positioned simply in the



slots of a pentagonal drum at the rear of the turret shaft to control feeds, spindle speeds, length of cutting stroke and skip indexing. Either or both cross slides can be selected to operate with any or all turret faces.

A 15-hp, 1660-rpm reversing motor is employed. Spindle speed ranges from 40 to 1102 rpm; six automatically selected speeds are available in either of two ranges. Thirty-six feeds are available, from .00019 to 0.124-inch. Warner & Swasey Co., Dept. ST, 5701 Carnegie Ave., Cleveland 3, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

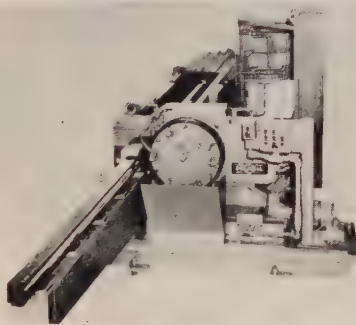
Horizontal Broaching Machine

... slots rings automatically

This horizontal broaching machine is one of a line designed for automatic broaching of external scallops or slots on different types of jet engine rings. Machines are

basically 10-ton, 60-inch and 10-ton, 90-inch stroke. The latter broaches a single dovetail slot with each stroke.

Hydraulically-actuated shuttle movement, which slides on the base using box-type square gibs, is mounted low to allow mounting of large diameter workpiece. Indexing is driven hydraulically through change gears and a Geneva movement, controlled by limit switches and with positive plunger locking. Selective electrical circuits provide for fully automatic operation, single indexing or for independent inching motions, including forward and reverse. Force



feed lubricates machine at each ram pass. Colonial Broach Co., Dept. ST, Box 37, Harper Station, Detroit 13, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

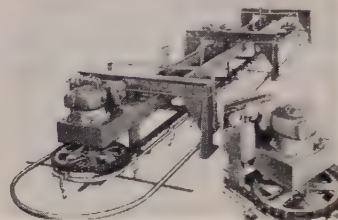
Packaged Plating System

... has versatility advantage

This packaged semi-automatic plating system is designed to augment still tank plating for electroplaters. According to the manufacturer, chief advantage of the system is its versatility. When a run is completed, the system can be altered for a different job by shifting pusher shoes to the desired spacing. Spacing in any dimension

in 2-inch increments can be accomplished in a minimum of time by removing pusher shoes.

Maintenance costs are held down by Zerk lubrication and use of



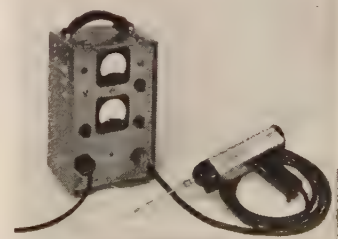
standard roller chain. Micarta pusher shoes last indefinitely. Hazards of drip moisture and corrosion are eliminated by the totally enclosed ball-bearing motor. Clean design permits loading at any point, even at tank ends. Wagner Bros. Inc., Dept. ST, 433 Midland, Detroit 3, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Redesigned Leak Detector

... sniffs tiniest gas leaks

Halogen-sensitive leak detector is redesigned to permit easier detection of leaks in closed systems. The portable instrument can detect a leak so small that only 1/1000 ounce of gas will pass through the



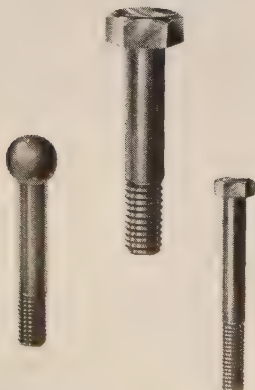
opening in a year. A loud speaker is built into the control unit for audible indication. The device also features an automatic balancing circuit to compensate for changes

cold forged metal fasteners

For (✓) high quality material, (✓) precise machining, (✓) fast assembly, and (✓) good appearance, specify **CHANDLER** cold forged metal fasteners. They are manufactured from tested high quality alloy steel by the most modern machinery and methods. Every fastener must pass rigid inspection to make sure it meets your specifications. This uniform high quality makes assembly faster, and smoothly finished heads assure good appearance of the completed assemblies.

Specialists in Alloy Bolts . . . Grinding to close tolerances . . . Drilled heads or shanks. Diameters 1/4" 5/16" 3/8" to 3" in length and diameters 7/16" 1/2" 9/16" to 5" in length.

958-CH



Manufacturers of Plug Self Locking Bolts

Chandler Products Corp.

1488 Chardon Road • Cleveland 17, Ohio

NEW PRODUCTS and equipment

in background air contamination

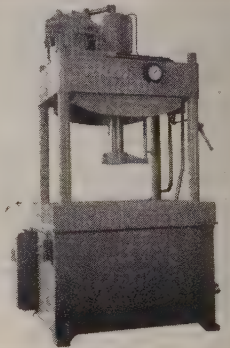
Incorporated in the control unit is a lightweight, internal voltage stabilizer. Equipment consists of a pistol-like sniffer and a 17-point control box about the size of a portable typewriter. General Electric Co., Dept. ST, Schenectady, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Four-Post Hydraulic Press

. . . capacities to 75 tons

The manufacturer has expanded its press line to include 50 and 75-ton four-posted hydraulic models. The 50-ton unit is cast of steel; the 75-ton model, of high-strength meehanite metal. Cylinder is



separate unit equipped with pistons and piston rings.

Rapid traverse operates at 1200 psi. Presses are constructed with clearance between tie-rods, left to right at 36 inches; front to back at 25 inches. Ram stroke is adjustable to 12 inches. Greenerd Air Press Co., Dept. ST, Nashua, N.H.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Centerless Grinder

. . . designed for versatility

Diversimatic centerless grinder is designed to grind a variety of parts, including bearings, bushings

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Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

70. Office Copying Machine

Charles Bruning Co. — Model 14 copyflex desk-side copying machine is described in new 8-page catalog. This machine will make quick accurate copies of any office form letter or memo, whatever the size, from translucent or opaque originals, or from originals having markings on both sides. Operation is simple. Complete details and data are given in the catalog, which is fully illustrated.

71. Mill Contactor

Allis-Chalmers Mfg. Co.—New design features of the type 260 heavy duty mill contactor are described in bulletin 14B6505A. New principle of arc interruption is used, speeding arc extinction and reducing contact burning. Greater accessibility and easier maintenance are built into the units, which are available in three ratings with maximum continuous ratings at 230 v between 40 and 150 hp.

72. Sheet Steel Separator

Basco Mfg. Co.—Sizes of magnetic sheet steel separators described and shown in 2-page bulletin include a three-high heavy duty unit and a smaller two-high unit. Height, width, number of magnets and maximum stack height are covered. Units speed sheet and strip feeding to presses.

73. Shock Insulation

Fabreeka Products Co. — General properties of Fabreeka, a resilient material for reducing shock, vibration and noise, are outlined in a 36-page illustrated booklet. Wide variety of machinery and transportation applications are described, and much technical data included.

74. Electric Impact Hammer

Black & Webster, Inc.—Production rates of 5000 pieces an hour with manual switching and 10,000 pieces an hour with automatic switching are possible with the Electropunch machine for such operations as staking, riveting, marking, swaging, cut-

ting-off and punching. Folder describes four models, explains such features as weight of impact control, single stroke control, safety switch, foot switch and repeating control.

75. Small Hole Grinder

Rivett Lathe & Grinder, Inc. — Ability of the model 84 small hole grinder to convert to external grinding is a feature discussed in illustrated catalog 84A. Other features covered are lathe-type spindle for direct mounting of draw-in collets and step chucks and swiveling of workhead or table for taper grinding.



76. Production Drilling Units

Barnes Drill Co.—28-page illustrated bulletin 150-C describes Barnesdrill production units for application in multiple or sequence drilling, reaming, facing, boring, tapping and other operations. Included are standard units, work transfer equipment, automatic chip disposal, power units, electrical controls and field applications.

77. American Welding Society

The scope and objectives of the American Welding Society are explained in literature now available. Members have for their own use the latest available welding know-how, including the society's monthly journal and Welding Handbook. Booklet explains how you can join the society and take advantage of its many benefits.

78. Comparative Presses

E. W. Bliss Co.—Detailed comparison of press numbers indicating identical sizes of Bliss, Toledo and Consolidated presses is offered in 32-page booklet. It is a reprint of section V of the "Bliss Power Press Handbook."

6-1-53

STEEL

Penton Building, Cleveland 13, Ohio

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etc., on the uses and applications of annealed carbonyl iron powders, hydrogen reduced iron powders and magnetites are available in 8-page illustrated catalog 354.

86. Phosphor Bronze Electrode

Weldwire Co. offers a newly developed phosphor bronze arc welding electrode for making high strength welds in phosphor and manganese bronze, in addition to the overlay of phosphor bronze in steel. Data sheet on chemical and physical properties and applications is available.



EDITORIAL REPRINTS:

87. Vibration Mounting

"Mounting Keeps Vibration in Place" is title of STEEL reprint by Wm. C. Gallmeyer of Gallmeyer-Livingston Co. which relates how vibration-reducing mountings on a grinder motor keep vibration from reaching the grinding wheel. Standard motor replaces custom-made model.

88. Surface Treatment Methods

It will pay you to examine... "Surface Treatment Methods," according to STEEL reprint of the same title by Dr. A. G. Gray, Technical Editor. Developments in surface treatments make it possible to improve adhesion and durability of plated coatings. Films under the plate are detrimental whereas films on plated surfaces are beneficial.

89. Improvised Welder

When work got too much for a machine at Pfaudler Co., operators converted one of two semi-automatic welders into an automatic machine. Only a temporary measure, the machine is effectively doing internal welds, leaving the machine to produce external welds. Company metallurgist R. Avery tells the story in STEEL reprint "Improvised Welder Meets Crisis."

90. Quick Change Artistry

Replacing one continuous mill with another of larger size and having producing within 15 days is a new trick. How this quick-change artistry was accomplished at Allegheny Lumber's Brackenridge Works is told in STEEL reprint "Strip Mill Does Quick Change." Careful planning and execution paid off in this case.

79. Screw Machine Alignment

Eastern Machine Screw Corp.—Stressing the importance of proper alignment in screw thread cutting operations, bulletin "Die Headlines" also shows the method and tools for checking and correcting such inaccuracies. The bulletin has a thoroughly practical and useful approach to the problem.

80. Small Metal Parts

Torrington Co., Specialties Div.—Small precision metal parts listed in 4-page folder include pins and pivots; screwdriver blades, rotary swaged rods, wires and tubing; grinding wheel mandrels; abrasive points and polishing wheels; perforating punches; and tapered or pointed wires and rods.

81. Testing Machine

Baldwin-Lima-Hamilton Corp.—Model FGT Baldwin-Emery SR-4 testing machine of 50,000-lb capacity is described in 4-page illustrated bulletin 4202. Universal machine has an electric weighing system based on the SR-4 resistance wire strain gage and a variable speed loading mechanism.

82. Industrial Trucks & Cranes

Baker-Raulang Co., Baker Industrial Truck Div.—How to select the right fork truck for your handling job is discussed in 8-page illustrated catalog 54 on a line of industrial trucks and cranes. Complete specs are presented for each Baker truck, as are construction and design features.

83. Welding Products & Info

Weldaloy Products Co.—Highlights of 112-page catalog entitled "Weldaloy" are a 19-page company section, 40 pages of products, 26 pages of welding information and 27 pages of conversion tables and general information. Products section covers every electrode known to the resistance welding industry.

84. Tap Data

Threadwell Tap & Die Co.—Pocket-size 56-page illustrated "Tap Manual" contains much data on taps, including basic information, sharpening, formulas, ordering, lubrication, speeds, tolerances, etc. Many drawings are used in this "textbook."

85. Magnetic Iron Powders

Magnetic Powders, Inc.—Complete technical data, including various photomicrographs, frequency versus Q-charts, permeability rating graphs,

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COMPANY _____

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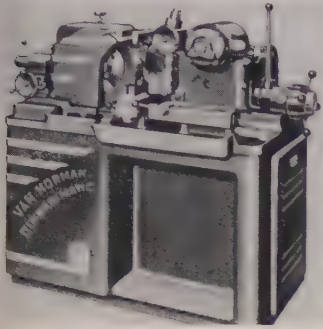
STEEL

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NEW PRODUCTS and equipment

up screws, formed parts or two more diameters or contours. Features include an easily removable grinding wheel, spindle quill with combined double-row ball and roll-



for bearings. It has combination straight and contour grinding wheel dresser.

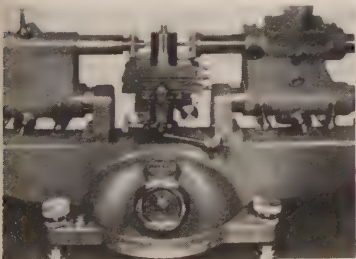
Crush forming attachment provides means for grinding small formed parts to high precision that are difficult to grind between centers due to work deflection. It depresses the wheel face to the desired contour, imparting exact profile to the work. Van Norman Co., Dept. ST, Springfield, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Horizontal Measuring Machine

... reads to 0.00005-inch direct

Built-in 4-inch glass scale permits this Microptic measuring machine to measure lengths or diameters of gages and parts to 0.00005-



inch direct reading and 0.00001-inch by convenient estimation. With simple standards of 4-inch length,

for a fabulous finish...



JEWEL BRAND Abrasive Belts

for grinding, sanding, polishing —
metal, wood, leather, plastics, rubber.



ABRASIVE PRODUCTS, INC.
511 Pearl Street
South Braintree 85, Massachusetts

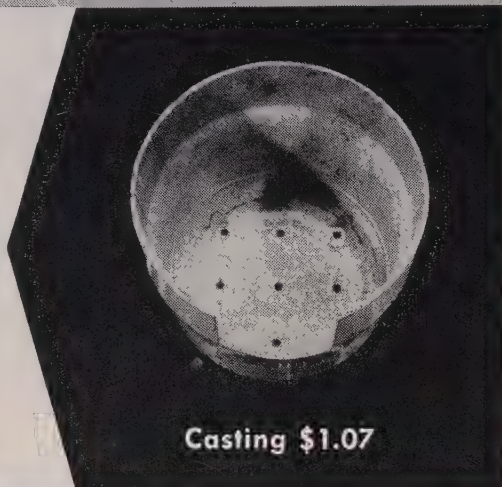
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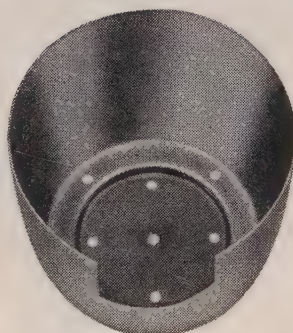
by converting

from castings



Casting \$1.07

to
**GEOMETRIC
STAMPINGS**

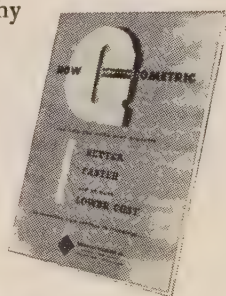


Stamping .57c

A large New England manufacturer called in Geometric engineers to study casting components of a new home appliance product. As a result the main casting shown above was converted to a stamping. Cost of the casting was \$1.07, cost of the stamping only 57c—a savings of 50c on each part—or \$54,000 saved per year.

If cost reductions like this make sense to you why not call in Geometric *now*—the earlier the better. There's no obligation and you may find substantial hidden profits—by converting from castings to Geometric Stampings.

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GEOMETRIC STAMPING CO.

A Subsidiary of Barium Steel Corp.

1130 E. 200th Street

Cleveland 17, Ohio

NEW PRODUCTS and equipment

it can be extended to a maximum capacity of 14 inches external measurement and 10 inches internal measurement.

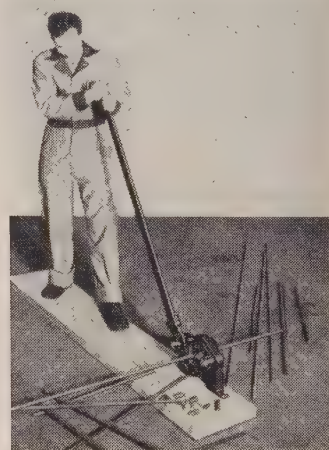
Work table is fully adjustable including provisions for tilt and rotation. Because no gage blocks or other length standards are required, the machine is a self-contained unit. The built-in scale operates without wear. Engis Equipment Co., Dept. ST, 431 S. Dearborn St., Chicago 5, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Lightweight Rod Cutter

... weighs only 42 pounds

Specially adapted shear constitutes a fast, accurate means for cutting steel rods of various kinds and sizes. Model No. 400 consists



of a movable shear blade and fixed shearing die, both easily replaceable.

The blade is moved by a geared 48-inch lever, producing adequate power for quick smooth cut. Tool capacity includes any type of mild steel from 1/8 to 3/4 inch diameter. The cutter can be mounted on a bench or carried to the work since it weighs only 42 pounds. Whitcomb Metal Tool Co., Dept. ST, Rockford, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

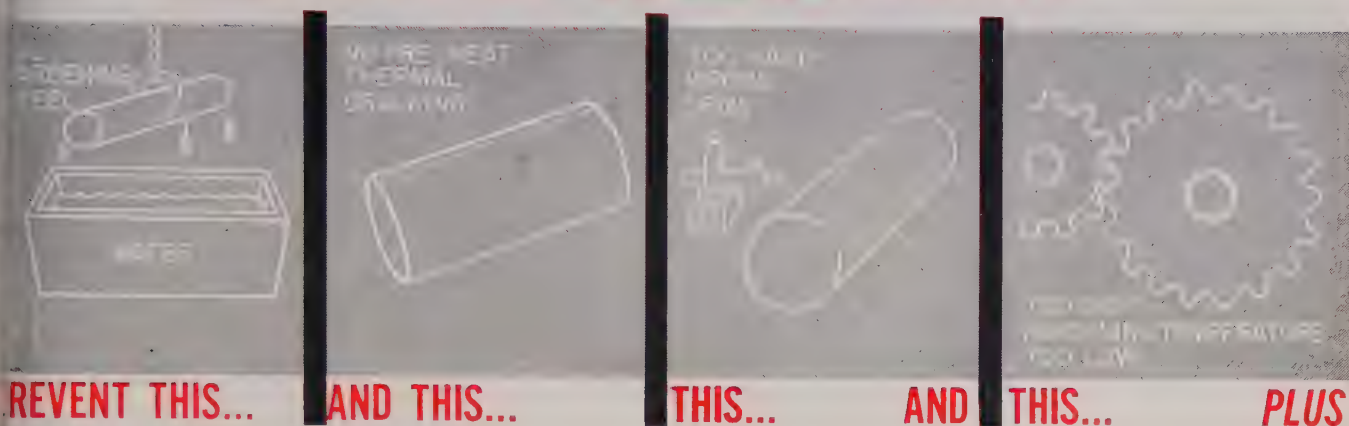
Right-Angle Compressor

... turbocharger uses waste heat

This Turbocharged two cycle right angle gas engine driven compressor develops 1320 bhp, has eight vertical in-line cylinders, 11 inch bore and 14-stroke connected integrally to horizontal compressor

SURE WAY TO PREVENT ERRORS

in HEAT TREATMENT



One of the most common causes of error in heat treatment is failure to give the heat treater necessary data on the physical properties and chemical composition of the material to be treated.

When parts do not respond to treatment as expected, further corrective treatment is often necessary thus wasting valuable time and hard earned money for both the customer and the heat treater. Or in extreme cases the part is actually rendered useless and becomes scrap.

Acceptance and use of the new SAE designations given to commonly used steels to show their heat treating characteristics and reactivity will do a great deal to eliminate costly error and uncertainty.

Use of these identifying codes will save further time for the customer and the heat treater since the standardization of the SAE designations will make many other specifications presently used unnecessary.

Copies of the SAE number assigned to various materials in accordance with their heat treatability can be obtained from your local MTI member or from the Metal Treating Institute.

Get a copy now and you will easily see how their use will help you.

Consult these Companies*

There's a Heat Treating Specialist Near Your Plant!

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Elizabeth, New Jersey
Anderson Steel Treating Co.
Detroit, Michigan
Benedict-Miller, Inc.
Lyndhurst, New Jersey
California-Doran Heat Treating Co.
Los Angeles 23, California
Commercial Metal Treating, Inc.
Bridgeport, Conn.
Commercial Steel Treating Corp.
Detroit 4, Michigan
Cook Heat Treating Co. of Texas
Houston 11, Texas
The Dayton Forging & Heat Treating Co.
Dayton 3, Ohio
The Drever Company
Philadelphia 33, Pennsylvania
Greenman Steel Treating Company
Worcester 5, Massachusetts
Fred Heinzelman & Sons
New York 12, New York
Alfred Heller Heat Treating Co.
New York 7, New York
Hollywood Heat Treating Co.
Los Angeles 38, California
Industrial Steel Treating Co.
Oakland 8, California
L-R Heat Treating Company
Newark, New Jersey
The Lakeside Steel Improvement Co.
Cleveland 14, Ohio
Metal Treating, Inc.
Milwaukee 4, Wisconsin

Metallurgical Control Labs.
Minneapolis 7, Minnesota
Metallurgical, Inc.
Kansas City 8, Missouri
Metlab Company
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South Boston 27, Massachusetts
Paulo Products Company
Saint Louis 10, Missouri
Pearson Industrial Steel Treating Co.
Chicago 50, Illinois
Pittsburgh Commercial Heat Treating Co.
Pittsburgh 1, Pennsylvania
The Queen City Steel Treating Co.
Cincinnati 25, Ohio
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Cleveland 14, Ohio
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Detroit, Michigan
Winton Heat Treating Company
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NOW-Grind Carbide Tools WITHOUT Diamonds

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IMMEDIATELY

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3 SIZES:
14" x 4" x 11"
10" x 2" x 7"
6" x 1" x 4"

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STANDARD PLATE
MOUNTING



With Light Wrist-Pressure, under steady coolant flow, these BAY STATE wheels:

1. **FINISH-GRIND CARBIDE SINGLE POINT TOOLS.**
2. **CUT AS FAST AS DIAMOND WHEELS.**
3. **CUT COSTS TO A MINIMUM.**

IMMEDIATELY AVAILABLE FROM STOCK, these new BAY STATE specifications have been especially developed to help you meet the present and continuing diamond shortage.

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TO KEEP CARBIDE CUTTING EDGES KEEN

Take advantage of Bay State's Advanced Engineering.

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WHAT DOES "METHODIZING" MEAN TO YOU?

When a team of industrial engineers, recognized as one of the best.....

analyzes a product's design and the materials it is to be made of in detail.....

develops efficient production methods, including automation, plant layout, materials handling, etc...

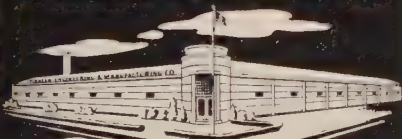
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When Pioneer does a job, whether it be just a part or a complete program.....

it's "METHODIZED".

That this approach is sound is proven by Pioneer's growth over the past 22 years.

Pioneer
ENGINEERING
& MANUFACTURING CO., INC.



19662 John R Street
Detroit 3, Michigan

NEW PRODUCTS and equipment

sor cylinders. Model TRA-8 represents a unitized, integrated design. The turbocharger and compressor are designed specifically to operate as a matched, balanced unit.

Turbocharging as incorporated in the model TRA is a method of



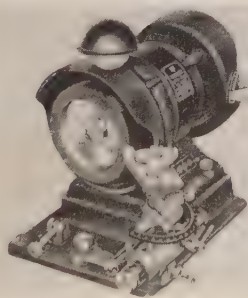
converting waste heat into energy. This is done by using waste heat, velocity and mass flow of the exhaust gases to drive a radial inflow turbine. The turbine, in turn, is connected integrally to a centrifugal compressor. Clark Bros. Co., Dept. ST, Olean, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Bench-Type Grinder

... produces exact cutting angles

Precision grinder produces perfect cutting edges and exact angles on all types of cutting tools through carbide, stellite and high speed steel. The bench type tool is rocked back and forth across the entire wheel face, eliminating wheel scoring and grooving. All front,



side and top angles can be set precisely in both vertical and horizontal planes. Feed toward grinding wheel is controlled accurately by a micrometer feed knob, graduated in thousandths of an inch.

Eliminating rigid pressure and localized overheating reduces danger of cracks. One side of the grinder is equipped with a quick acting indexing table that can be set instantly and accurately to the

since 1931

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America's high standard of living is the direct result of increased productivity through better tools and better methods.

Independent production engineering firms are the way to even higher standards.

Design, tooling and methods specialists, they increase productivity and cut costs in all phases of manufacturing.

With Pioneer as their leader, they are improving our standard of living through efficient and dependable engineering when and where needed.

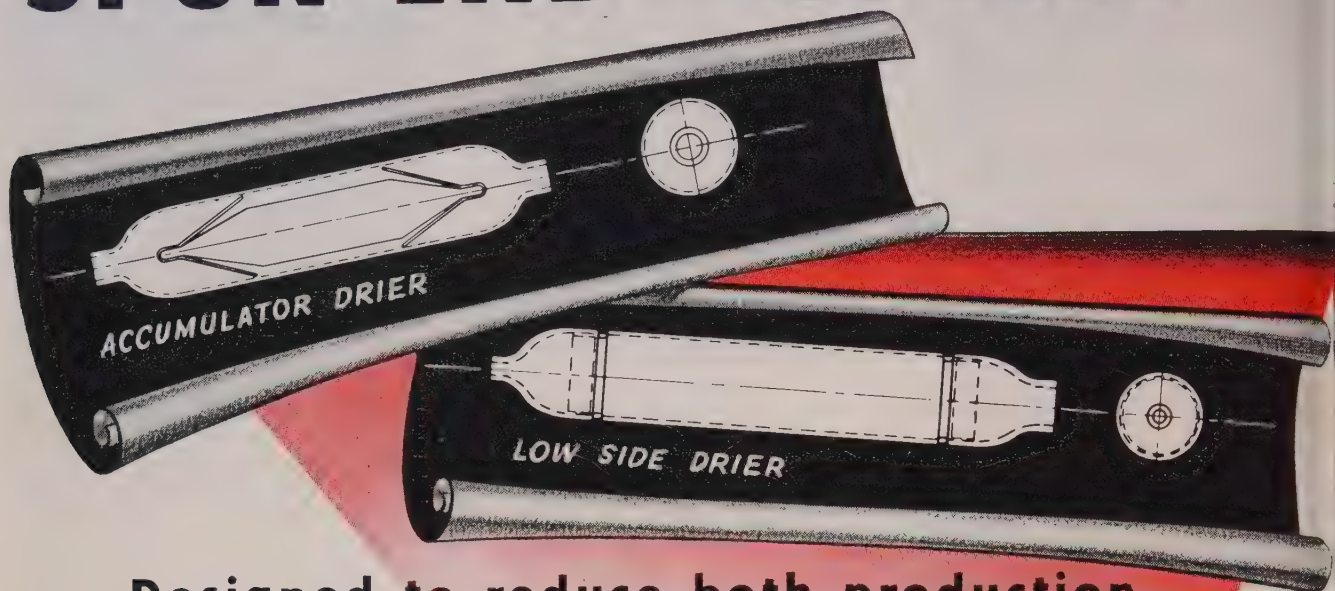
They can help you, too.

Pioneer
ENGINEERING
& MANUFACTURING CO., INC.



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Detroit 3, Michigan

Two *New* examples of Wolverine's **SPUN END PROCESS***



Designed to reduce both production cost and operating cost . . .

BOTH of these typical examples are driers used in the refrigeration industry. Starting with a basic tubular form of a certain length, each end is partially closed by the Spun End Process to a smaller diameter to accept tube connections for inlet and outlet.

In the case of the accumulator drier illustrated at the top, one end of the tube is formed by spinning. Then, after the screen bag and baffles are fitted inside, the opposite end is formed.

The low-side drier is produced in the same manner. The final spinning is done after one end has been formed and the vertical flat screens and silica gel have been positioned within the tube.

Both designs obviate use of end closures, thus reducing costs of such extra parts and the resulting assemblies.

A wide variety of end forms can be produced to meet almost any requirements, in both nonferrous and steel.

- ✓ The drier at the top is made of copper in standard sizes: 1", 1¼" and 1½" O.D.
- ✓ The lower drier is made of copper in standard sizes: ¾", 1" and 1½" O.D.

We'll be glad to send you a copy of our brochure, Spun End Tube, describing this process and suggesting ways it can bring you advantages.

*A PATENTED PROCESS RE. 22465

Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.

WOLVERINE TUBE DIVISION
of **CALUMET & HECLA, INC.**

Manufacturers of Tubing Exclusively
1439 CENTRAL AVENUE • DETROIT 9, MICHIGAN

Plants in Detroit, Mich. & Decatur, Ala. Sales offices in Principal Cities



Other Wolverine Products

- CAPILATOR*
—the capillary tube for restriction purposes
- COMMERCIAL TUBE
- AUTOMOTIVE TUBE
- CONDENSER TUBE
- COPPER WATER TUBE (K-L-M)
- ELECTRIC WELDED STEEL TUBE
- FABRICATED TUBULAR PARTS
- WOLVERINE TRUFIN*
—the integral finned tube
- REFRIGERATION AND AIR CONDITIONING TUBE (Plain or Tin Plated)
- S.P.S. PIPE
- SPUN-END TUBE†

*Reg. U.S. Pat. Off.
†A Patented Process RE 22465

EXPORT DEPT., 13 E. 40th ST., NEW YORK 16, N. Y.

Choose Wolverine's Electric-Welded Steel Tube for these important reasons...

because it is made to close tolerances. It will meet the high physical characteristics you may require.

- because its outside surface can be finished to suit your requirements.
- because you are assured consistent top quality. Every length passes through a succession of thorough tests.
- because it is made to meet your specifications. Straighteners and fabricating equipment provide you with tubing in the form you want it.

With such worthwhile advantages available to you, you should include this Wolverine Electric-Welded Steel Tube in your buying considerations, particularly if you're thinking of ways to improve your product or to effect economies in its manufacture.

Wolverine's experience in producing tube exclusively, augmented by continuous research and product development has been carried on for well over 30 years. Wolverine engineers have tackled and solved all sorts of tubing problems—why not let them analyze yours?

Wolverine's Customer Engineering Service is available without obligation. Write or call Wolverine's Customer Engineering Service.



WOLVERINE TUBE DIVISION
of CALUMET & HECLA, INC.

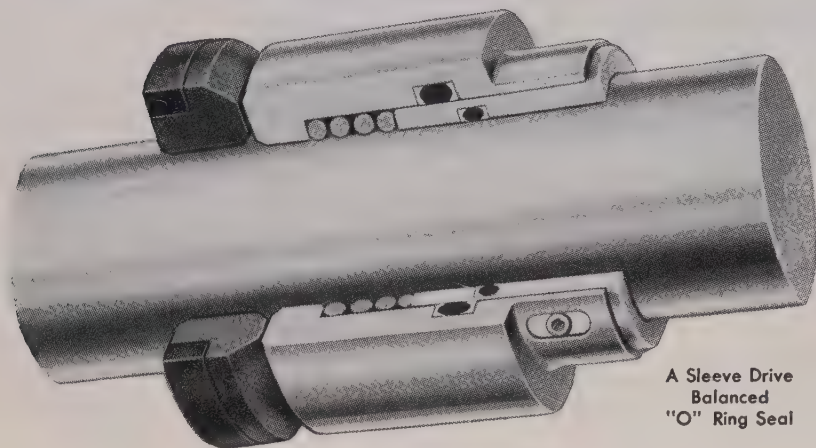
Manufacturers of Tubing Exclusively
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EXPORT DEPT., 13 E. 40th ST., NEW YORK 16, N. Y.

Garlock "O"-Ring Seals

FOR ROTATING PUMP SHAFTS



A Sleeve Drive
Balanced
"O" Ring Seal

Simple in Design, Leakless in Operation

GARLOCK "O" Ring Mechanical Seals are made with a minimum of parts. This simplicity of design affords easy manufacturing adaptability of a Garlock "O" Ring Seal to withstand any liquid, whether mild, harmfully corrosive or extremely hazardous, on rotating pump shafts. The Garlock "O" Ring Balanced Seal will hold pressures up to and over 1000 p.s.i.

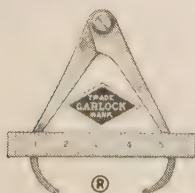
The "O" rings are available in "Teflon," Buna-N, Neoprene or Silicone. The metal parts contacting the liquid are available in any suitable metal.

On centrifugal pumps handling chemicals, petroleum products, edible liquids, pulp liquors, and many other liquids Garlock "O" Ring Mechanical Seals are giving outstanding service.

For positive sealing, easy installation and trouble-free service use Garlock "O" Ring Mechanical Seals on your rotating pump shafts. Write us about your sealing problems or contact your Garlock representative.

THE GARLOCK PACKING
COMPANY
PALMYRA, NEW YORK

In Canada:
The Garlock Packing Company
of Canada Ltd., Toronto, Ont.



GARLOCK

PACKINGS, GASKETS, OIL SEALS
MECHANICAL SEALS
RUBBER EXPANSION JOINTS

NEW PRODUCTS and equipment

required angle. It remains fixed in position without need of locking devices. Thomas Prosser & Sons, Dept. ST, 120 Wall St., New York 5, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Bar and Channel Shear

... added to line of cutters

This bar and channel stock shear is an addition to the Guillotine line of hydraulic cutting tools. The unit, model 20-339, has cutting capacity up to $\frac{1}{2}$ x 2-inch flat bar stock or channels to $\frac{9}{16}$ x 2 x $\frac{3}{16}$ -inch. Shear is powered by



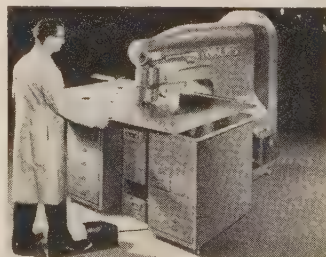
$\frac{1}{2}$ -hp electric hydraulic pump, provides 30-tons thrust. Pump weight is 80 pounds; shearing unit weighs 48 pounds. The assembly can be obtained dolly-mounted for mobility. The shear can be obtained with a manually-operated hydraulic pump weighing 13 pounds. Mancini Manufacturing Co., Dept. ST, Bradley, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Sheet Metal Fabricator

... punches, notches, nibbles

Punching, notching and nibbling are included in the range of functions



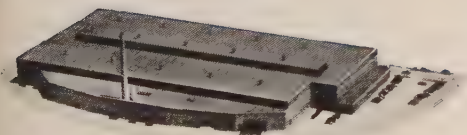
served by this model 10-0 Sheet Metal Fabricator. It has 277

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QUALITY TUBING FOR YOUR MOST EXACTING REQUIREMENTS



Write for Illustrated Brochure

NIKOH... America's most modern tube mill... will design and produce the right tube for your needs. NIKOH is geared for the quantity production of highest quality electric weld steel tubing... tubing that consistently meets the exacting requirements of industry and government.

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MAY WE QUOTE ON YOUR TUBING NEEDS?

NIKOH TUBE COMPANY 5000 S. WHIPPLE ST. • CHICAGO 32, ILLINOIS • GROVEHILL 6-6500

We Serve Steel

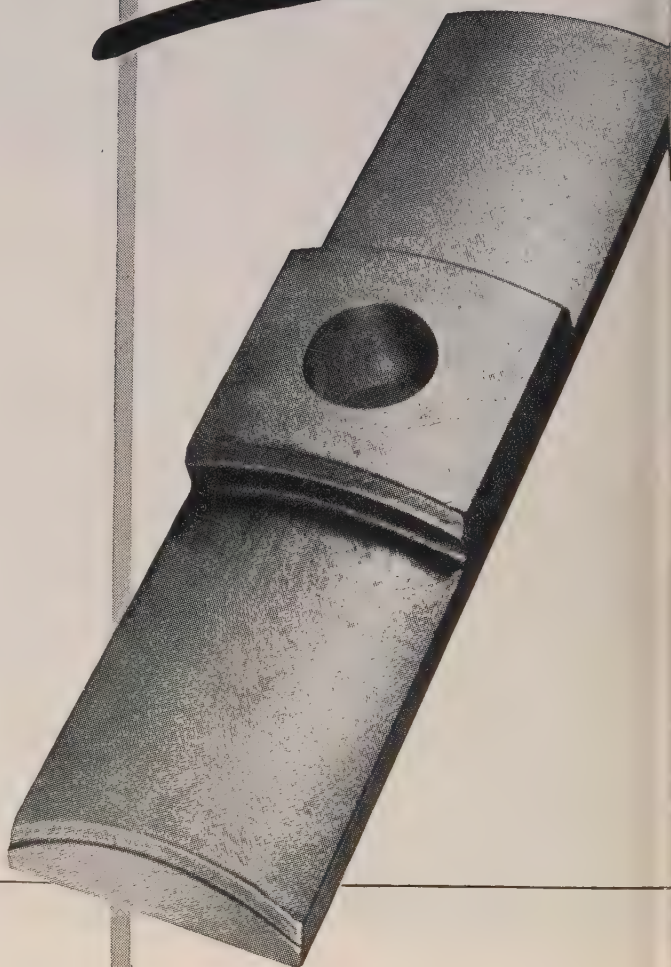
Knowing Copper Alloys

Better Best

We specialize in copper and copper-base alloys such as bronze. And we cast these metals for steel industry use by the most advanced methods. For example . . . this aluminum bronze slipper is made by our permanent mold technique and requires *no machining* after casting except for the pin hole. Oil grooves are actually cast-in. Surface hardness is completely controlled, and our customers realize dollar savings through our production-run economies.

National Bearing Division offers you the benefits of more than 50 years of experience, metallurgical research and production-run facility development.

Our 6 centrally located plants are ready to serve you. Contact National Bearing Division for full information.



A FEW NATIONAL BEARING STEEL INDUSTRY PRODUCTS: Bosh Plates • Monkeys • Tuyeres • Coolers • Mantel Plates • Stack Plates • Roll Neck Bearings • Housing Nuts • Babbitt Metals • Slippers

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ch throat depth with back gage installed, and 30½-inch throat without back gage. Punch assembly holder arm swings to the right for quick punch interchangeability. Punches and dies are aligned automatically. This permits holes to be punched to a maximum 2⅓ inches diameter.

Hydra-New-Matic head operates with minimum of vibration and noise at 165 strokes per minute. Built-in counter placed at eye level totals ram strokes automatically. Sales-Strippit Corp., Dept. ST, 345 Wayne Ave., N. Tonawanda, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Power Rod Cutting Gage

... maintains 9000 cuts per hour

Micro-matic gage makes it possible to maintain a 9000 cuts per hour rate in bar stock with the manufacturer's Di-Acro power rod cutter. The operator simply concentrates on feeding stock through



the cutting heads as quickly as he can. He pays no attention to foot or hand control.

Parters for cutting square, rectangular, hexagonal, round and other shaped bars are available. O'Neil-Irwin Mfg. Co., Dept. ST, 619 Eighth Ave., Lake City, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Soluble Oil Coolant Lubricant

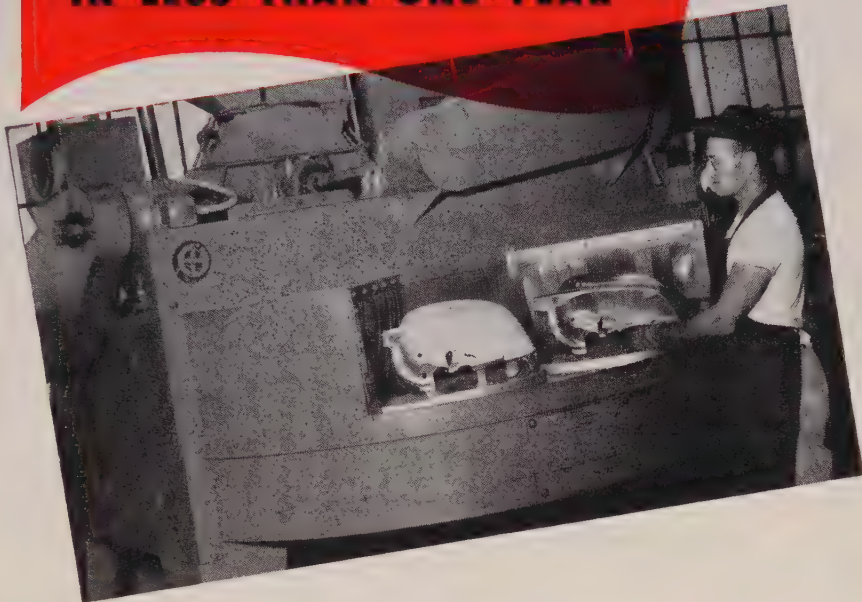
... maximum operating range

Soluble oil is developed for use as a coolant-lubricant on almost all types of metal cutting, grinding and forming operations. The oil presents multi-viscosity blend that enables it to handle the maximum range of speeds, feeds and materials.

Development work on the coolant extends to its color, which is a soft blue to minimize eye strain by machine operator. Other features

WHEELABRATOR[®] AIRLESS BLAST CLEANING RETURNS INVESTMENT IN LESS THAN ONE YEAR

for
JOHNSON
"Sea-Horse"
motors



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REDUCED POROSITY

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HAND POLISHING**

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**INVESTMENT RETURNED
IN 10 MONTHS**



New, informative book gives complete, concise information on all phases of airless blast cleaning. Write today for Catalog No. 74-A.

At the Johnson Motor Division, Waukegan, Illinois, two Wheelabrator machines not only returned the entire cost of the equipment, but also made a 25% profit on the investment . . . in one year.

At the same time "Wheelabrating" has provided these extra benefits: Finishing operations on aluminum die castings have been improved by providing a more uniform surface; at least 40% of the porous castings that would have been "leakers" now pass the water test after shot peening; minor imperfections which previously required hand buffing are now removed, with the result that polishing takes less labor time and paint adheres more firmly; many of the smaller burrs and flash are removed, which greatly reduces the cost of manual deburring.

Benefits like these are too important to overlook . . . perhaps the Wheelabrator can do the same for you . . . why not investigate it soon?



American

WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka 5, Ind.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

GAIN

valuable
PARKEE

Add durability and control corrosion with **BONDERITE**

A dozen things you use every day are Bonderite-protected. Bonderite, under the paint on automobiles, appliances, office and industrial equipment, guards against rust and corrosion, anchors the paint, adds years to the appearance and service life of the finish.

Bonderite, applied by spray or immersion, converts the surface of metal to a nonmetallic phosphate coating. It is adaptable to varying requirements, operates with simplicity and dependability. It is low-cost, adds greatly to paint performance.

Greater efficiency, economy in cold forming of metals with **BONDERITE** and **BONDERLUBE**

This is the combination of Parker Products which have put many "problem draws" into production routine. The nonmetallic Bonderite coating—used for years in tube mills for its ability to hold lubricants, minimize galling, lengthen tool and die life—joins with scientifically compounded Bonderlubes. This combination allows deeper draws, more severe extrusions. Saves time, money and materials. Used in manufacture of shell cases, shafts, gears, etc.

Add maximum corrosion resistance with **PARCO COMPOUND**

Iron and steel gain most effective protection against rust when treated with Parco Compound. Creates a nonmetallic crystalline phosphate coating over all surfaces of the product treated. Size and shape of product makes no difference—anything which can be immersed in the tank can be treated. Tools, springs, brackets, hardware, ornamental iron, plates, nuts, bolts, and nails are among the hundreds of items on which Parco Compound is used. It's industry's standard rust-resistant product.



Advantages for your products by using a metal surface treatment...

Get high corrosion resistance, increased paint durability on aluminum with **BONDERITE 710**

A simple, versatile, effective treatment for aluminum, which may be used on sheets, castings, forgings, extrusions, and structural forms. It imparts exceptionally high corrosion resistance unpainted, and is a fine base for paint. Bonderite 710's performance meets government specifications for chemical treatment of aluminum and its alloys.

Get increased wearing quality on friction surfaces with **PARCO LUBRITE**

This Parker product creates a nonmetallic phosphate coating on friction parts and bearing surfaces. Its action is to prevent metal-to-metal contact, hold lubricant, prevent galling and scratching. Smooth, easy break-in is assured, and longer subsequent service life is promoted.

Used with great success on gears, shafts, pistons, piston rings, valves, cylinder linings, etc.

Clean your production with a cleansing and conditioning **PARCO CLEANER**

The Parker line includes alkali, acid and emulsion cleaners formulated not only to remove grease and soil but to condition the work for the next step in finishing as well. There's a Parco Cleaner to meet your conditions of soil, production requirements and finishing operations.

Use **PARCOLAC** to stain, wax, or oil-finish parts

This group of products is made up of various finishes for use after Parco Compound. Includes wax base finishes, stains, and rust preventive oils suitable for application by dip, spray or centrifuge. Can meet fast or slow drying requirements. Parcolacs add to appearance and performance qualities of articles treated.



**Bonderite, Bonderlube, Parco Compound, Parco Lubrite—Reg. U.S. Pat. Off.*

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1915—
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the field

Send for
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Technical
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PARKER RUST PROOF COMPANY

2158 E. Milwaukee, Detroit 11, Michigan

NAME _____

FIRM _____

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include absence of rancidity or objectionable odor that sometimes develops after long periods of use. Special additive helps protect hands against the causes of dermatitis. No special mixing procedure is required. Rapid emulsification with even the hardest waters is possible in any proportion. Shear-Speed Chemical Products Division, Michigan Tool Co., Dept. ST, 7125 1st McNichols Rd., Detroit 12, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Turret Head Nibbler

... cuts tougher alloys

This turret head nibbler is reported outstanding in its ability to cut tough alloys. Unit will cut without distortion any shape from high-alloy flats, curves, irregular



or tubing up to 1/2 inch and mild steel alloys up to 1 inch. Turret head feature permits cutting tool to be turned instead of stock. Thus, stock can be cut with twice the depth of the machine throat. It takes any length. Attachments for shearing, crimping, beading, folding, etc., add to versatility. Tabor Mfg. Co., Dept. ST, 6225 Tacony St., Philadelphia 35, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

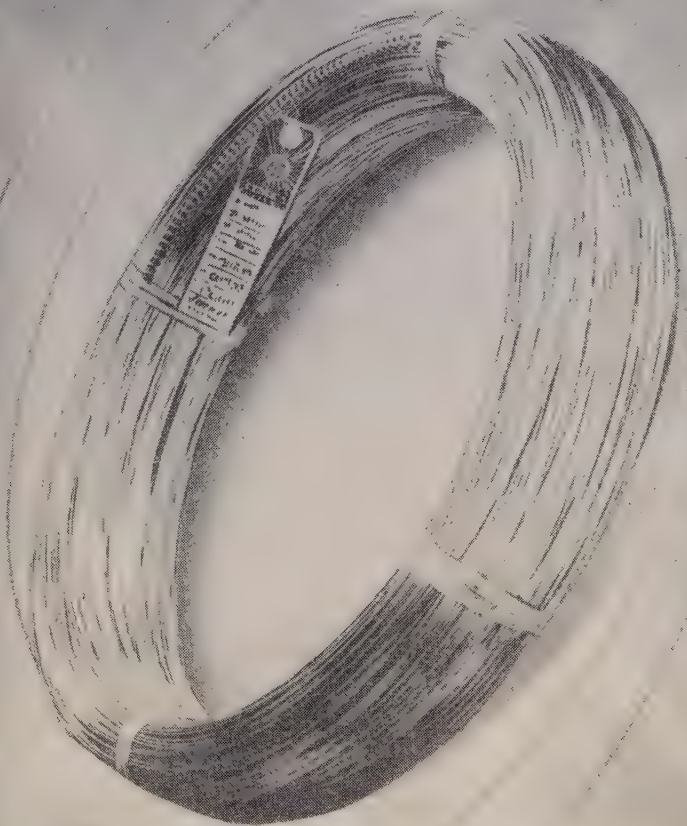
Laboratory Size Mixer

... duplicates production mixing

This model LF Mix-Muller provides laboratories and pilot plants with a small working duplication of production mixing to establish mixing standards or check quality and efficiency. It has 24-inch pan diameter, and all components are in direct proportion to the production size model.

Spring-loaded mullers can be ad

JOHNSON



HIGH QUALITY HIGH CARBON WIRES

People want and expect more things than ever before in history—and by special delivery, too.

And that, to a considerable extent, is true of the wire business. The day when any wire would do has long since passed—and that is one of the reasons why JOHNSON MUSIC WIRE is made in more than 200 sizes, all the way from 8.3 feet to over seven miles to the pound. And every order is routed for the fastest possible special delivery.

JOHNSON STEEL AND WIRE COMPANY, INC.

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THE CARBORUNDUM COMPANY, Dept. S 84-31
Niagara Falls, New York

Gentlemen:

I would like to have the FERROCARBO story—no obligation on my part.

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STREET AND NUMBER

CITY

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"Carborundum" and "Ferrocarbo" are trademarks which are registered in the U. S. by The Carborundum Company, Niagara Falls, New York, and in Canada by Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

IRON AND BRASS CASTINGS



220% FASTER, 30% CHEAPER



FROM BALDWIN

Recent changes in foundry facilities enable Baldwin-Lima-Hamilton to offer you triple savings on iron and brass castings:

1. New squeezer and roll-over machines help Baldwin produce castings so much finer that you can cut out a lot of costly machining required on ordinary castings.
2. Baldwin has been able to reduce casting prices as much as 30% by passing along to you the savings resulting from new automatic equipment and streamlining of pouring operations.
3. By speeding up casting deliveries 220%, Baldwin enables you to reduce costly delays in your production schedules.

Please write Dept. 5946, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa. for further information about the 110 brass and 20 iron alloys available.



BALDWIN-LIMA-HAMILTON

Philadelphia 42, Pa. • Offices in Principal Cities

NEW PRODUCTS and equipment

justed to exert pressures 30 to 80 pounds to meet a wide range of lab mixing requirements. It can be



adapted easily for heating or cooling while mixing and can be furnished in stainless or other special metals. National Engineering Co., Dept. ST, Machinery Hall Bldg., Chicago 6, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Heat Detection System

... checks belt-driven equipment

This heat detection system eliminates fires on belt-driven equipment through a detector that picks up heat generated by overload, belt slippage or frozen shaft. Detector contacts, which control power circuit through 110 or 220-v solenoid, then open and cut power to the entire compressor system.

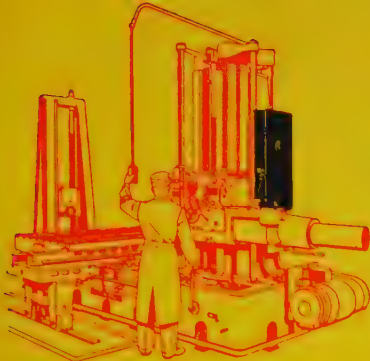
The unit is highly resistant to shock and vibration. Actuation temperature is preset by the manufacturer and cannot be tampered with in the field. Detector is hermetically sealed to prevent moisture and other substances from corroding and fouling interior mechanism. It is automatically self-resetting, actuating repetitively without any adjustment. Fenwal Inc., Dept. ST, Ashland, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Portable Noise Detector

... gives audio-video reading

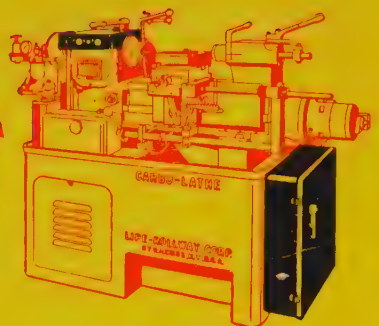
Practical aid to good maintenance, testing and inspection is provided by this audio-video portable electronic instrument. It is designed for locating noise sources in all types of mechanical equipment. The model includes a milliammeter for checking sound im-



HORIZONTAL BORER



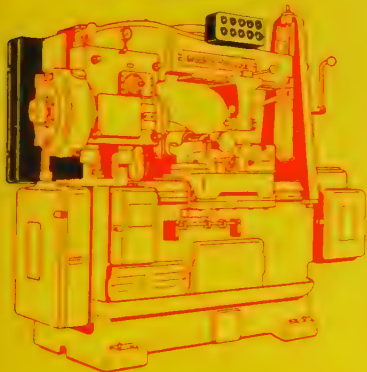
DRILLING MACHINE



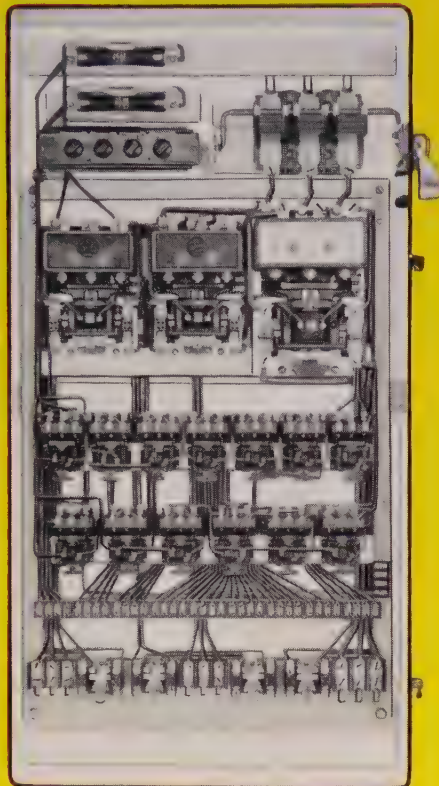
CARBO LATHE



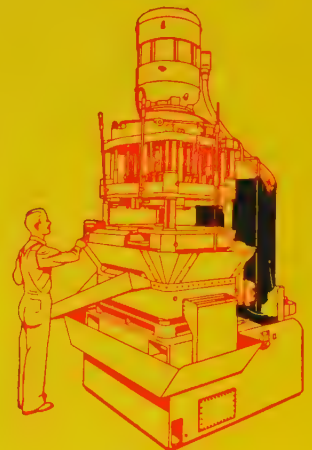
TURRET-HONE



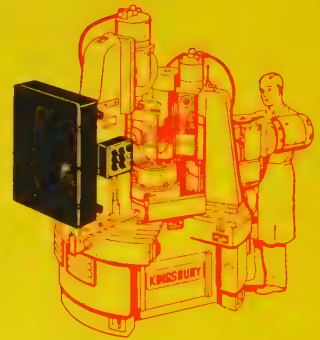
HOBBIING MACHINE



Typical machine tool control panel showing disconnect unit, contactors, and accessories



DRILL



TAPPING MACHINE

MACHINE TOOL CONTROL PANELS

• • • ENGINEERED TO SATISFY YOUR NEEDS

Allen-Bradley control panels are popular with machine tool builders, because—

1—A-B contactors and relays have acquired a world-wide reputation for dependability and precision control. Consistently, they perform millions of trouble free switching operations.

2—A-B engineers, through long experience, are skilled in developing sequence control panels. Due to the compact design of A-B components, smaller panels are a common result . . . which means less space is used on the machines.

3—The A-B trademark is a sales asset for your motorized machine tools. It is the mark of Quality in motor control . . . known and accepted by machinery

buyers, everywhere.

It will pay you to discuss your control problems with Allen-Bradley. A field force of Allen-Bradley engineers, located in all principal cities, is at your service. We shall be glad to send you the A-B Handy Catalog.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.

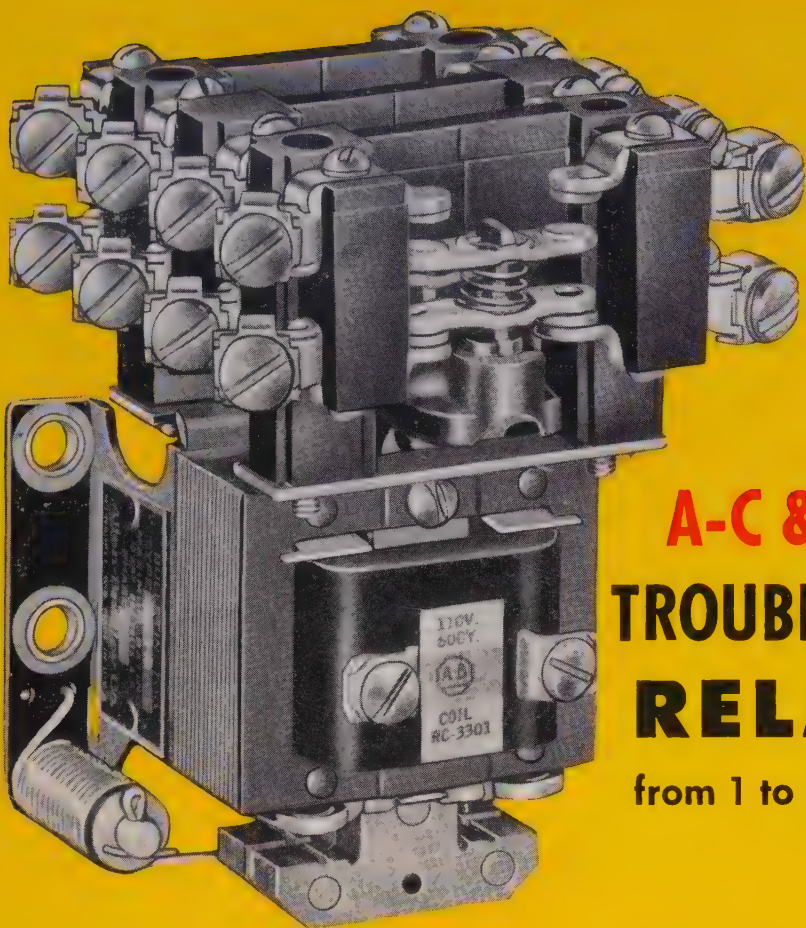
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ALLEN-BRADLEY

QUALITY

SPECIAL PANELS



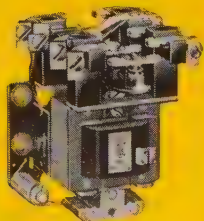
A-C & D-C TROUBLE FREE RELAYS

from 1 to 12 POLES

THE UTMOST IN RELAY DEPENDABILITY

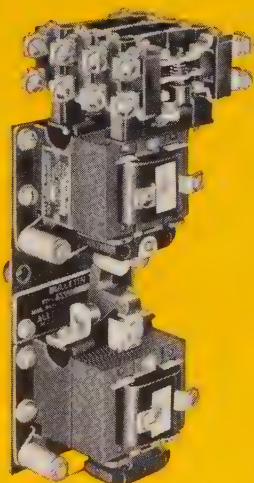
HUM-FREE A-C RELAYS

Relays in hospitals, churches, etc., must be hum-free. For these places, Types BM and BXL relays are recommended. Continuous coil currents are not needed to hold them closed. Also useful for machine tools.



**TYPE BM—Residual
Magnetic Latch**

Contacts are held closed by residual magnetism of core. A demagnetizing coil current opens relay.



**TYPE BXL—Mechanical
Latch 2-Unit Relay**

Lower solenoid trips the mechanical latch of the upper relay to open the upper relay contacts.

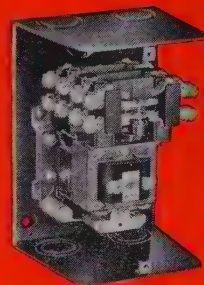
Bulletin 700 Relays are built to the same critical operating standards as the larger switching units in the Allen-Bradley line.

They have only one moving part . . . the simple solenoid plunger that opens and closes the double break, silver alloy contacts. Available in many varieties of contact arrangements . . . up to 12 poles . . . with or without enclosures. Long, trouble free life makes these relays the ideal pilot controls for installations which are likely to get infrequent inspection and maintenance.

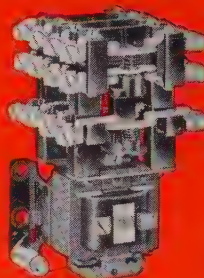
Send for Bulletin 700 containing complete details on ratings, dimensions, and related accessories.

Allen-Bradley Co.
1316 S. Second St., Milwaukee 4, Wis.

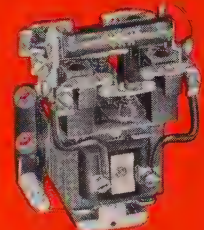
TYPICAL RELAYS in the ALLEN-BRADLEY LINE



Relay in Enclosure



8 Pole A-C Relay



3-Wire
Thermostat Relay



Low Current
A-C Relay



D-C Relay



Bulletin 709 Size 3
Solenoid Contactor

ALLEN-BRADLEY

QUALITY

RELAYS & CONTACTORS



NEW PRODUCTS and equipment

pulses visually, in addition to the standard headphones for audible operation. Thus, the operator can



see as well as hear location of the source of trouble.

Accuracy is enhanced by use of a stable germanium crystal diode in circuit. Anco Instrument Division, American Name Plate & Mfg. Co., Dept. ST, 4254 W. Arthington St., Chicago 24, Ill.

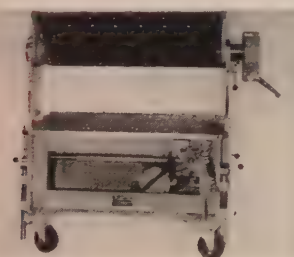
FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Portable Die Handler

... has motorized lift unit

This portable die handling device for taking apart heavy dies can now be equipped with a motorized lift attachment, suitable for factory or in-field installation by the customer. Mounting holes are incorporated in all standard models of the handler.

Motorized lift attachment drives the upper platen 16.3 inches per



minute. Fine adjustments are made by hand crank. A safety precaution is incorporated that makes it necessary to disengage the hand crank before connecting the motorized lift. Hansford Mfg. Corp., Dept. ST, 1239 University Ave., Rochester 7, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Hydraulic Gap Press

... good for unwieldy jobs

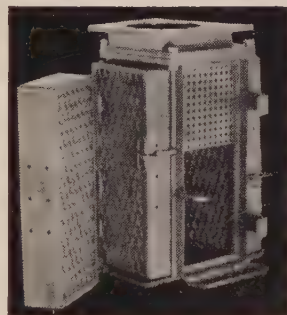
This hydraulic gap press is designed for jobs that require accurate pressures up to 20 tons, such as drawing, forming, bending, riveting and piercing. Its large frame



YOU'RE ON THE
RIGHT TRACK
WITH

EXPANDED METAL MESH

Cheapest "Diamonds" You Can Buy



Farr Filter Adapter Assembly used extensively on freight and passenger locomotives.

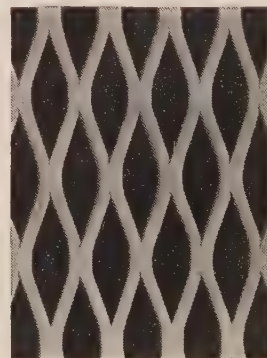
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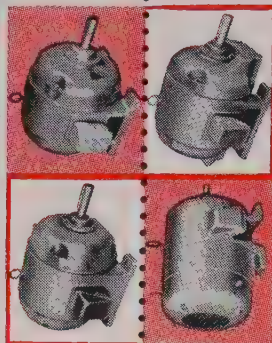
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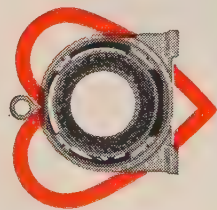
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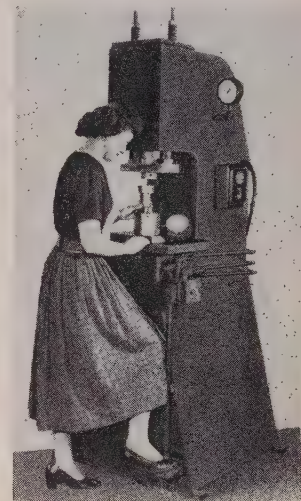
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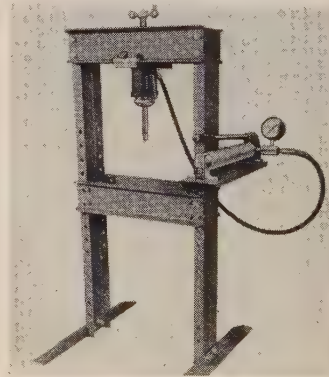
ground. The unit is constructed with 10-inch gap. Platen size: 12 x 17 x 2½ inches. Studebaker Machine Co., Dept. ST, 1221 S. 9th Ave., Maywood, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Hydraulic Shop Press

... ram serves dual purpose

This hydraulic shop press is equipped with the manufacturer's 17½-ton Power-Twin ram, serving a dual purpose through its use as a detachable portable power unit. The



press is equipped with hydraulic hand pump that develops 10,000 psi; a 6-foot-high pressure hose connects pump and ram. A 15,000 psi gage is supplied to provide actual pounds or tons pressure used. Owatonna Tool Co., Dept. ST, 398 Cedar St., Owatonna, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

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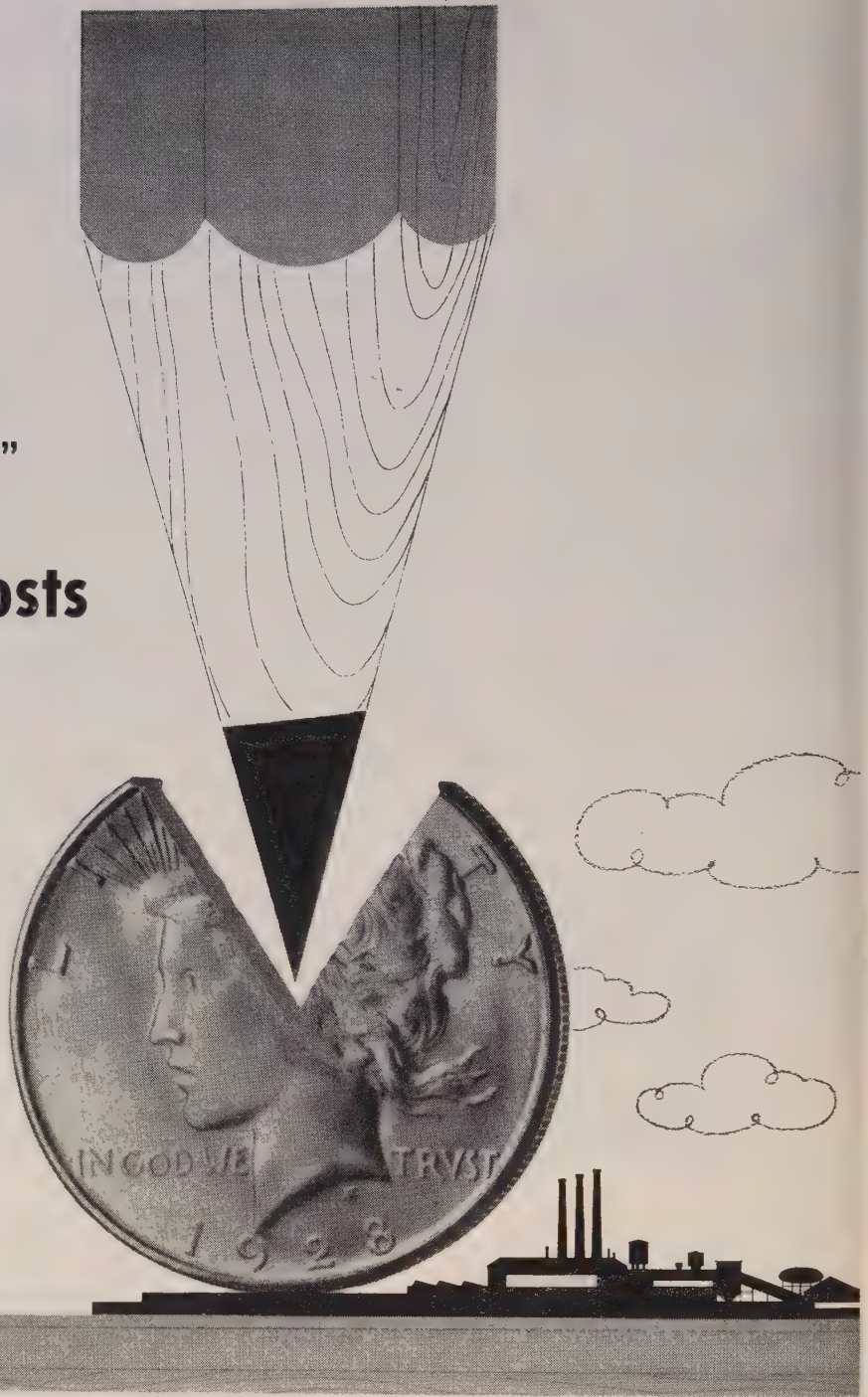
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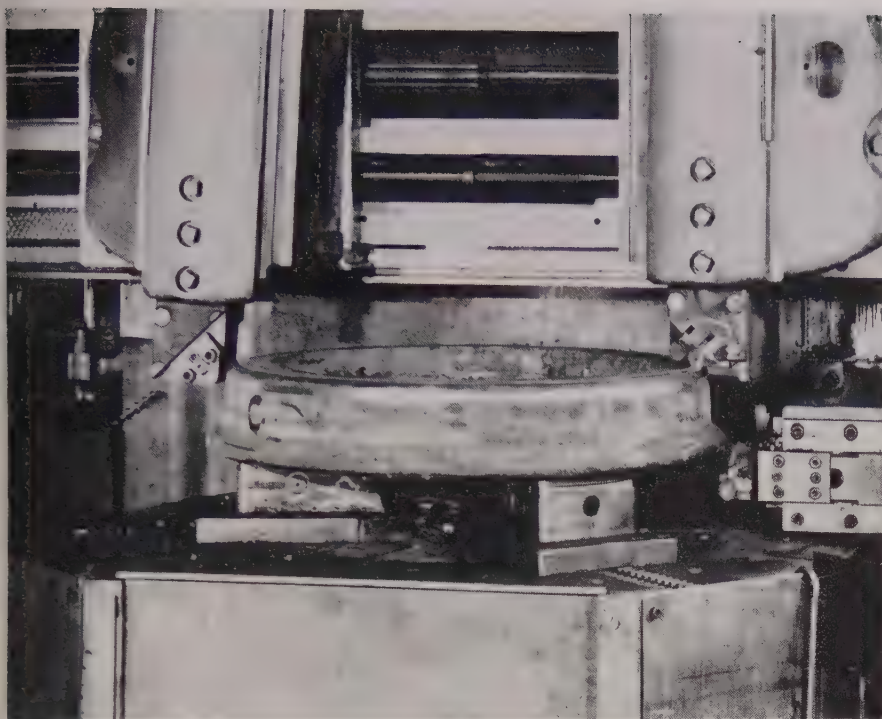
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MACHINING STEEL CAR WHEELS
... tracer makes operation automatic

Indexable Inserts Sharpen Boring Performance

IMPROVED finish, reduced scrap and substantially-increased production are advantages a Western Pennsylvania Steel firm reports through use of a tungsten carbide tooling setup on its wheel boring lathes.

On this job, operators rough-bore 6-inch diameter wheel holes in 36-inch diameter forged steel car wheels with a special step boring head. The head has four 1-inch diameter Kendex grade K4H inserts positioned so each cuts a proportionate amount of the total stock removed. The inserts are fastened to the boring head with socket head cap screws that permit indexing to a new cutting edge several times before regrinding is necessary.

Eight Edges—Despite runout of the 6-inch diameter rough pierced hole, each wheel is bored in one pass on a car wheel boring unit at 320 sfpm and 0.044-inch feed (see p. 168). About 25 wheels are bored before inserts are rotated to a new cutting position. Since eight new cutting edges are available, 200 car wheels are bored before inserts require regrinding.

In another installation, a 1¼-inch diameter insert made by Ken-

nametal Inc., Latrobe, Pa., works to advantage on a Bullard wheel lathe which turns flange and tread, plus facing outside of rim and hub, on 250 brinell wheels in 6 minutes floor-to-floor time. The same operation on 325 brinell wheels is completed in 11 minutes.

Lathe is equipped with tracer attachment, making machining automatic. The machine works at 27 rpm and 254 maximum sfpm for the one-wear, or 250 brinell wheels; on multiple wear, or 325 brinell wheels the rate hits 18 rpm and 161 sfpm.

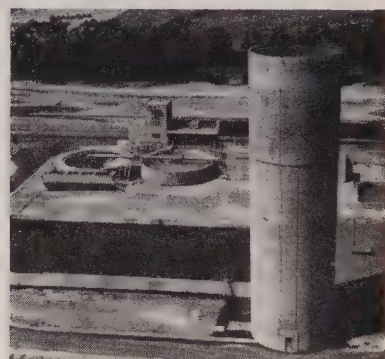
Template Guide—Two inserts in the contouring-head tool machine the flange as they are guided around the form by a tracer finger following a template. This cut is started on the flange's underside with tool No. 1. As the insert proceeds around the form, feed is varied automatically from 0.008 to 0.041-inch at the largest diameter.

About 50 wheels can be machined before it is necessary to rotate inserts to new cutting positions. Since six such indexable cutting edges are available before any regrinding is necessary, the number of wheels machined per grind amounts to about 300.

what's NEW in Engineering

Supersonic waves pulverize rock in a new milling machine.

Recently demonstrated at Reno, Nev., by its inventor Joseph Bassick, the machine turns nonmetallic rock to powder instantly. Crushing impact is delivered by sound waves. It promises to work on metals, too.



How to produce a ton of steel using only 1400 gallons of water—instead of the industry average of 65,000 gallons—was the problem facing Kaiser Engineers in building the West's only completely integrated steel mill at Fontana, Calif. For details, just drop us a line. We'll send you a reprint of a recent article about it in *Plant Engineering* magazine.



A new gadget—the pocket-sized double right angle prism—is proving a boon to many engineers in the field. Major advantage is the fact that you can look through it—straight ahead on the line of sight—and at a right angle at the same time.



"Engineering Statistics and Quality Control" is an important new book by Irving W. Burr, professor of mathematics at Purdue. Due for July publication, it is clear, unified, practical. Primary emphasis is on statistics most immediate and usable in industry.



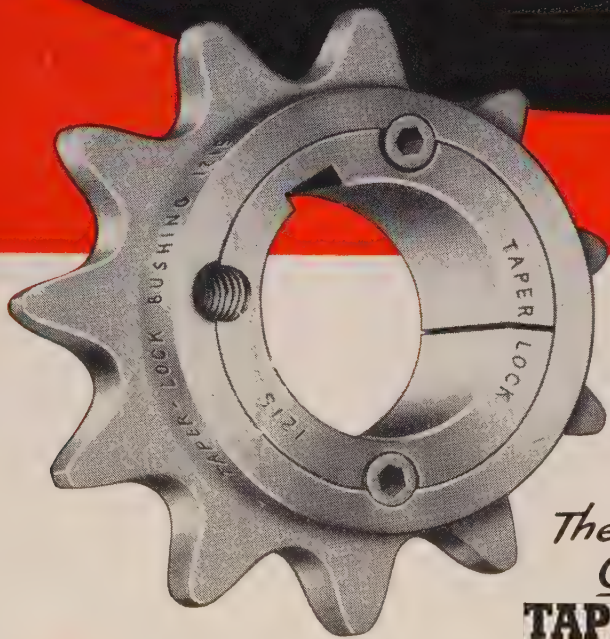
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No more costly and time-consuming boring of sprockets to fit your shafts! *Taper-Lock bushings are available in a range of sizes for the great majority of industrial applications.* And it's not necessary that shafts be turned and ground to get a tight fit. *Taper-Lock not only is keyed to the shaft, but grips it with the firmness of a shrunk-on fit.* Yet when a sprocket is to be replaced, it comes off easily, quickly. The bushing may be re-used.

Taper-Lock sprockets are compact. They have no flange, and no protruding parts. Taper-Lock occupies

no more space on the shaft than standard sprockets. The flush design means safety.


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Taper-Lock sprockets will be carried in Distributors' stocks for immediate delivery, in a complete range of B-type steel sprockets— $\frac{1}{2}$ " to $1\frac{1}{4}$ " pitch. The range in $\frac{5}{8}$ " pitch, for example, is 12 to 112 teeth.

All bushings and the smaller sizes of sprockets are packaged individually. Dodge roller chain is packaged in 10-foot lengths—and can be furnished in 50-foot and 100-foot reels.

For detailed information about Taper-Lock sprockets and Dodge chain drives write now for Bulletin A-624.

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SPROCKETS

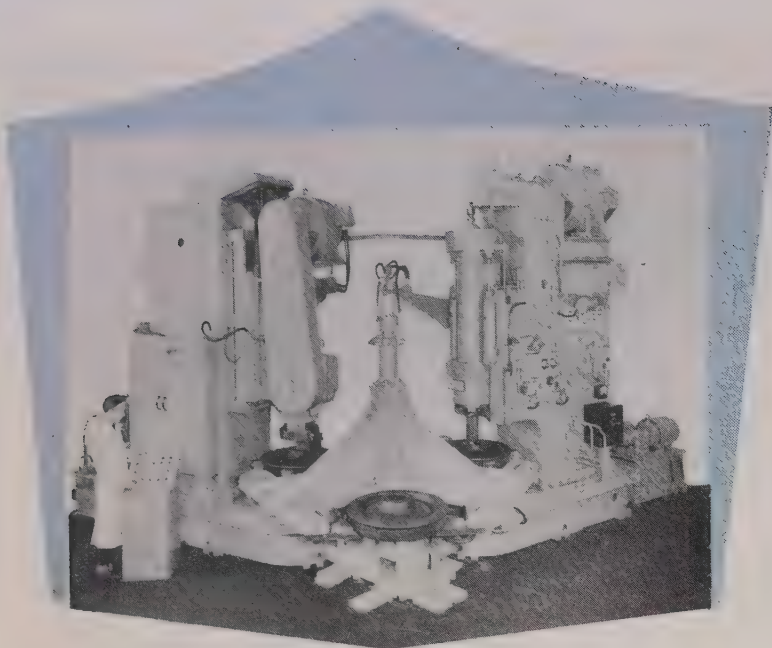
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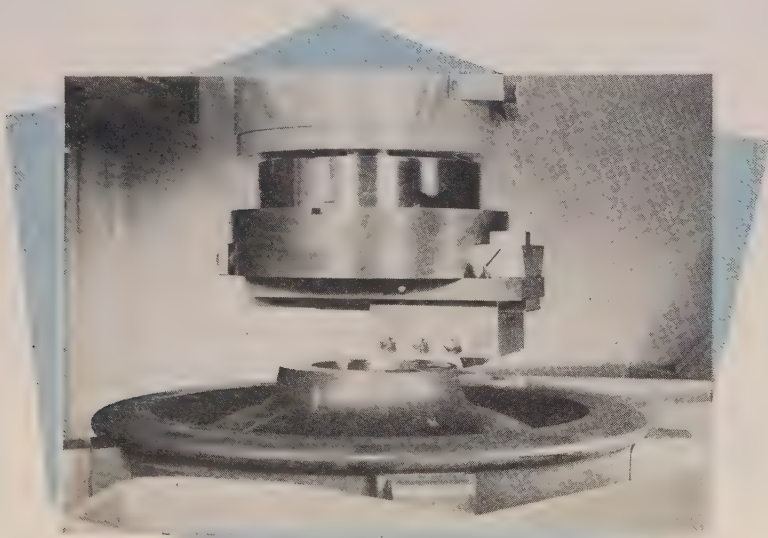
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Rotating fixture takes wheels from the load-unload station at front of machine back to the facing, left, and boring stations. Table is driven by a fluid motor for controlled deceleration.



Jaws clamp wheel for facing cut. Hydraulic draw bar works through rack and pinion to produce cross feed



Both round and square carbide tips are used on the boring bar. Roughing and finishing are done simultaneously

CAROUSEL

FOR CAR WHEELS

AUTOMATION has a part to play in manufacturing even when production figures are, by almost any standards, low.

In the manufacture of railroad car wheels, for example, one of the big deterrents to smooth production is the weight and size of the parts. They're tough to handle and even tougher to load and position in machines.

Two in One—Answer to one stage of the operation comes with the application of automation. Snyder Tool & Engineering Co., Detroit, built a machine which both bores and faces the hub. Handling between the two operations is automatic.

Columns and heads are essentially standard Snyder components. Facing operation is done with a vertical spindle. A hydraulic draw-bar operates the cross feed through a rack and pinion arrangement.

Boring head is also standard. Interesting note is the use of button-type carbide tips. Use of four tips, two round and two square, accomplishes the roughing and finishing cuts to be taken in the same pass.

Highlight—Actual heart of the machine is the indexing mechanism. It's a rotating fixture with three work-holding positions, 120 degrees apart. During the machining cycle the fixture rotates three times, 120 degrees each, from load to face to bore and then to unload.

Wheels are loaded into and unloaded from the front position with a two-tong hoist. Wheel blank rests on locating seats. Actual load-unload work takes place while the facing and boring is being done on two other wheels.

First Step—From the load-un-

Facing and boring operations are performed on the same machine. Indexing fixture transfers parts from one work position to the other

load position, the wheel blank is rotated into the facing position. Here, a holding mechanism rises, lifts the wheel off the seat on the indexing fixture, and jaws clamp the part in place. The spindle rotates and the facing cutter is drawn into the cut.

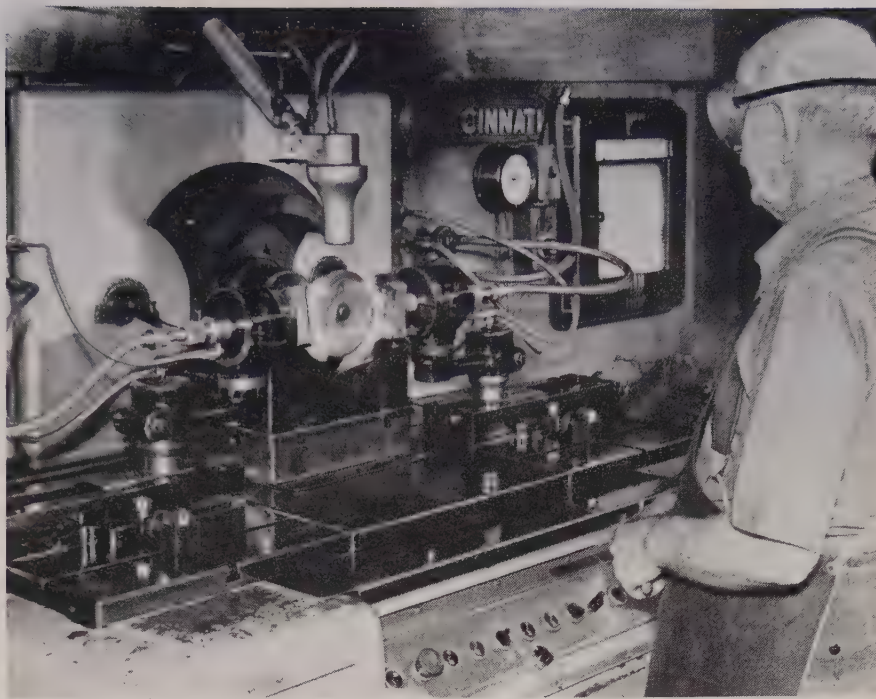
When the facing cut is completed, the jaws open and the holding mechanism retracts—re-seating the wheel on the indexing fixture. Workpiece is then moved on to the boring position.

On Around—In the boring position, another set of jaws raise the wheel off the indexing fixture and clamps the part. The boring bar makes its pass through the hub, roughing and finishing at the same time. When the cuts are completed, the jaws open and lower the part back on the fixture. It's then rotated into the unload position.

Operator controls the machine through a remote panel. Each motion in the cycle can be run individually. This facilitates setup and the taking of test cuts. In normal operation, a cycle-start button is used. This starts the automatic sequence of one machining cycle including index, clamping, cutting, unclamping and index.

Failure of a part to be located properly in either the facing or the boring position will prevent the machine from operating. This practically eliminates tool breakage.

Machine cycle time for boring and facing wheels with 6¾-inch bore, 7 inches long, is 1 minute, 25 seconds. It gives 33 machine cycles per hour. This is based on a surface speed of 260 sfm and a feed of 0.045-inch per revolution.



Increasing the bore of the burner nozzles and adjusting the flow of gases were only details altered to convert the machine to natural gas application

NATURAL GAS: A Switch for Heat Treating

Change from bottled gas to natural gas on this heat treating operation, cuts dollars from the operation cost. Problems of conversion turned out to be little ones

NATURAL GAS plus Flamatic hardening cut a large chunk out of a heat treating cost for Nash Motors Division, Nash-Kelvinator Corp., Kenosha, Wis.

Production demands on ring gears and sprockets sent the Nash engineers looking for the best possible method to harden the parts. Holding costs to a minimum became extremely important.

Two Decisions—Method of hardening took a natural first place. The nod was given to a Flamatic hardening machine built by Cincinnati Milling Machine Co., Cincinnati. Finishing a close second in importance, however, was the decision of which type fuel to use in the machine.

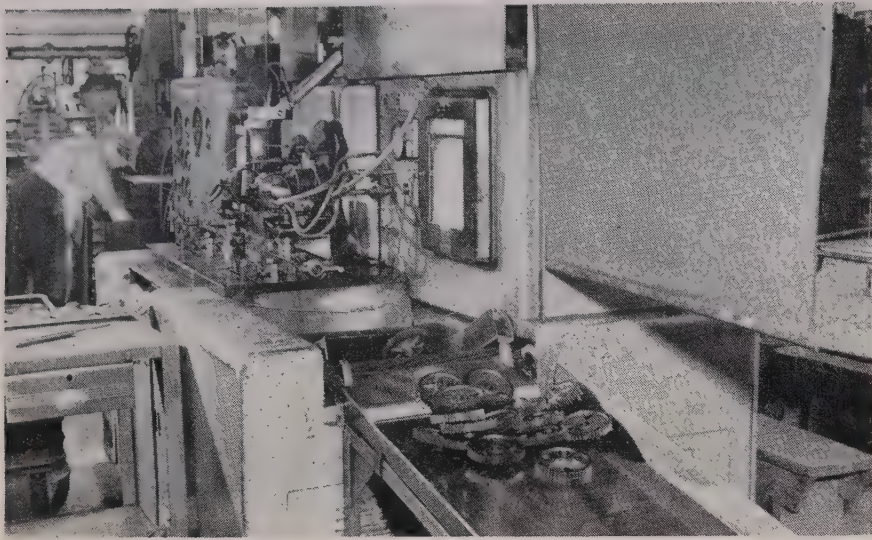
Engineers at both Nash and Cincinnati got together and ran some relative cost figures. A switch from bottled propane gas showed the change would be justified if it could be worked out. Cost figures included

not only the prices per unit of the two gases, but the cost of replacing the propane bottles periodically and other handling costs.

Little Trouble — Modifications and alterations to convert to natural gas turned out to be relatively easy and inexpensive. The burner nozzles came with a 0.0465-inch hole. Nash put a #50 drill through and enlarged the holes to 0.0700-inch.

Next the machine was hooked up to the natural-gas lines already in the plant. This was nothing more than a plumbing job. Oxygen lines were brought into the machine from an area just outside the plant. Actual mixing of the two takes place at the burner.

Two-Day Supply — Oxygen is stored in a tank trailer. Each trailer takes care of about two days' production. Stand-by oxygen tanks supply the machine while the trailers are being changed. They



When preset temperature is reached, parts drop into a quench. A conveyor then automatically lifts them from the oil bath onto table for handling

also serve as an emergency, or standby, reserve.

Cycle time on the sprockets is 8 seconds. On the gears it's 21 seconds.

Size of the parts ranges from the 12-inch (plus) gears down to the 5½-inch sprockets. Change time from one job to another ordinarily will consume about one hour's downtime.

Minimum depth of case hardening is 5/64-inch. On the gears the hardness on the pitch line is between 43 and 52 Rockwell "C" scale. At the root diameter the reading is between 25 and 40 on the same scale. Production rates

are in the neighborhood of 1100 parts per day.

The Payoff—Cost figures for the Nash installation show that with bottled gas, the operation would cost about 0.690 cent per piece on the sprockets and 3.292 cents per piece for the gears. Comparative figures using natural gas are 0.570 cent per sprocket and 2.545 cents per gear. Savings with natural gas fuel are thus 0.120 cent per sprocket and 0.747 cent per ring gear.

Figured on the basis of 1100 parts per day on each this amounts to more than \$2,400 per year savings plus the difference in cost of handling the two fuels.

Waste Heat Pays

Six-story-high boiler uses furnace waste to supply steam at White Pine copper smelter

PLANS to recover copper in one of the richest undeveloped deposits on the North American continent called for a specially-designed boiler to utilize what would otherwise be waste heat from a copper reverberatory furnace. The boiler, designed and being built by Babcock & Wilcox Co., New York, will supply steam to a turbo-generator to furnish power for the project.

Scene of this operation is the White Pine copper smelter, 188 miles southwest of Ontonagon, Mich. Explorations conducted over the past 15 years by Copper Range Co., Boston, determined there is a sufficient ore body to produce copper for the next 50 years. The company is constructing necessary facilities to recover, process and ship fire-refined copper from the site.

The ore mineral is mainly chalcocite, a cuprous sulfide. Total ore reserves amount to 309 million tons averaging 21.3 pounds of copper per ton.

Design, Operation—The boiler, which will be about six stories high, is to be in line with and following the reverberatory furnace in which the copper ore is melted.

Gases heavily laden with slag particles and dust leave the reverberatory furnace at a rate of approximately 143,000 pounds per hour, at 2600°F. They enter the waste heat boiler furnace first, then pass through the superheater and convection section of the boiler.

Hot slag particles will fuse on any surface they contact, especially if the surface is hot. To cope with this problem, the waste heat boiler was specially designed with a tube-to-tube water-cooled wall radiation chamber, widely spaced platen-filled chamber and superheater chamber and a cross-flow convection boiler section, B&W engineers explain.

Cooled to Dry Ash—The heat absorption of the water-cooled furnace walls and the water-cooled platens reduces temperature of incoming gases 400 to 500° F before they enter the superheater chamber. Thus, suspended slag



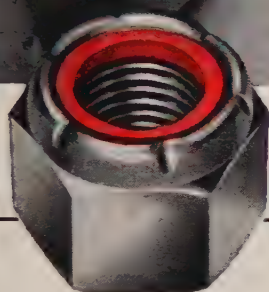
Oxygen supply stands just outside the plant—is piped in to the machine. Each trailer lasts for about two days. It's then swapped for a new one

Wobble means wear

Formula for Failure

$$\frac{w + e + s + \alpha}{\times v} =$$

a loose
connection



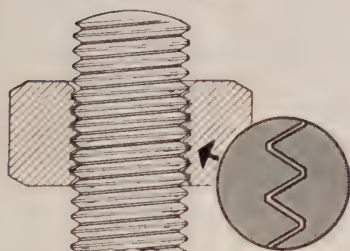
Elastic Stop nuts can't wobble

Formula for Failure—[(w) Initial thread wear + (e) bolt stretch + (s) thermal expansion or contraction + (α) wobble] × (v) vibration = a loose connection.

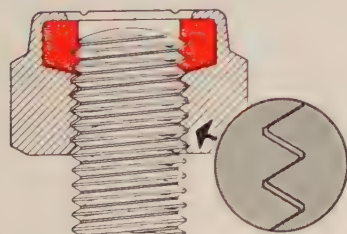
WOBBLE, permitted by normal axial thread play, and vibration are two of the major elements contributing to thread wear, loose connections and ultimate failure of a threaded fastener.

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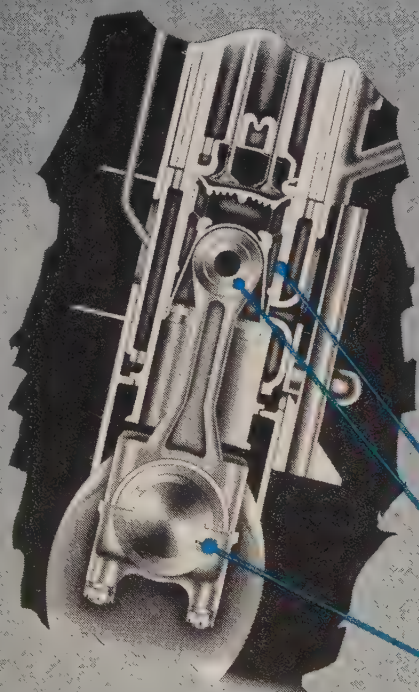
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particles are cooled to a dry ash which drops to the furnace hopper and into the hoppers under the boiler. From there it is returned to the reverberatory furnace for retreatment to reclaim the copper.

The parallel, instead of the usual staggered tube arrangement makes cleaning more effective. This is accomplished by automatic telescopic soot blowers located in lanes between the platens, superheater and boiler convection sections, periodically blowing high pressure steam through nozzles across the boiler.

Advantages—The arrangement prevents slag accretion on tubes which would otherwise necessitate hand lancing, a time-consuming and expensive operation.

Another result will be minimized draft loss and insurance against sulfurous gases leaking into the boiler. This will be gained by a single-pass horizontal cross gas flow arrangement from the reverberatory furnace outlet through the waste heat boiler and to the balloon flue inlet. Using this waste heat from the reverberatory furnace instead of fuel for the generation of steam, the waste heat boiler recovers about 50 per cent of heat in the fuel originally supplied to the reverberatory furnace.

Capacity—The boiler is designed to generate steam at 885 psi at a temperature of 920° F at the superheater outlet. The steam generated is used not only in the power plant, but a portion is used to pre-heat combustion air by means of steam air heaters for the copper reverberatory furnace.

At such times as the reverberatory furnace may be shut down for repairs, the boiler, by a special arrangement, can be fired with pulverized coal, thus assuring continuous full production of steam at all times.

Ordnance Totals Soar

The San Francisco Ordnance District (northern California, Washington, Oregon, Montana, Idaho and northern Nevada) currently is administering contracts totaling about \$500 million, says Maj. Gen. E. L. Cummings, chief of the Ordnance industrial division. This compares with \$325 million in April, 1945, a peak month in World War II.



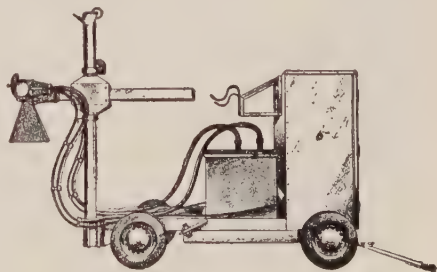
Costly Repair Avoided by Early X-ray Inspection

The Lang Company, Inc., of Salt Lake City, Utah, makers of pressure vessels, uses the Westinghouse 250 KV Mobile X-ray Unit extensively throughout their plant. This mobile unit moves easily to the fabrication site. A complete X-ray inspection is quickly made, and defective welds are replaced at a lower cost than if found after pressure tests.

Throughout the metal-working industry the Westinghouse 250 KV Mobile X-ray Unit handles many equally important money-saving tasks. If internal defects increase your costs, this X-ray unit will help you lower them.

Westinghouse has X-ray sales offices across the nation; they are staffed by experienced men who can help you solve inspection problems, and who can demonstrate savings. Call your nearest X-ray representative or write to the address below.

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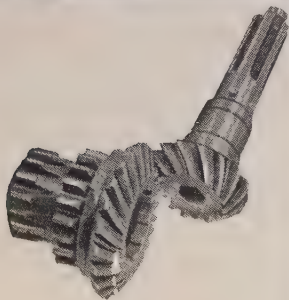
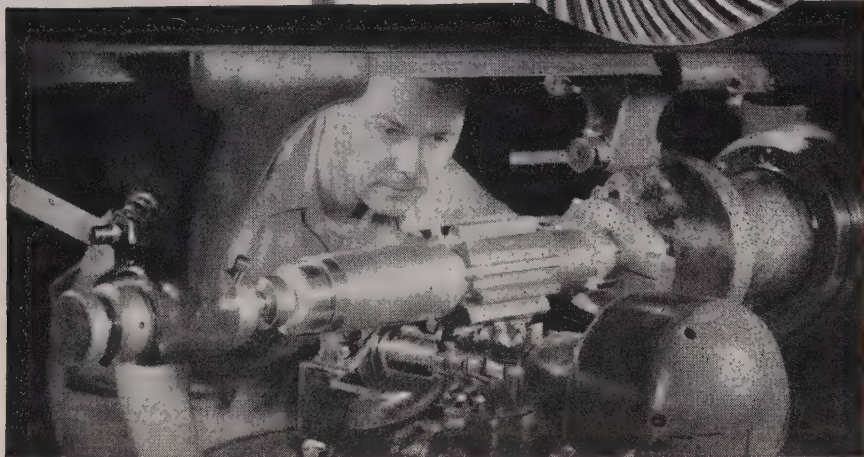
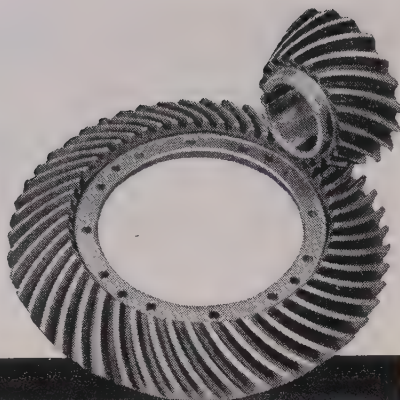


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QUALITY PLUS—There is no finer recommendation for the quality of the product you sell than to be able to say that it is "EQUIPPED WITH FAIRFIELD GEARS!"

DEPENDABLE SOURCE OF SUPPLY—Supplier of precision-made, automotive type gears for over thirty years to leading builders of construction, agricultural, industrial, marine, and automotive equipment.

COMPLETE PRODUCTION FACILITIES—Unexcelled facilities in a new and ultramodern plant for producing Spur, Herringbone, Spiral Bevel, Straight Bevel, Hypoid, Zerol, Worms and Worm Gears, Splined Shafts, and Differentials to your specifications.

ENGINEERING SERVICE—Fairfield engineers are qualified to make expert recommendations on your gear production requirements. Take advantage of the service offered. *Your inquiry will receive prompt attention.*

FAIRFIELD

MANUFACTURING CO.

2313 So. Concord Road
LAFAYETTE,
INDIANA



Jet Part Plant Expanded

Subcontractor adds 36 furnaces
for heat-treating, tempering in
\$6 million expansion

BINGHAM-Herbrand Corp. recently placed in operation at its Fremont, O., plant a \$6 million expansion program designed to produce jet-engine parts on a subcontract basis for the Studebaker Corp. The new aviation division where turbine buckets and blades for J-47 jet engines are now in production, uses approximately \$1 million worth of General Electric apparatus in its manufacturing processes.

In addition, GE provided a complete project-handling service for the installation including design and co-ordination of all electric requirements. GE engineers furnished engineering services for the installation and maintenance of the new equipment required for the manufacture of jet-engine parts.

Furnaces Galore—The major portion of this million-dollar order was made up of induction heating units, electric furnaces and power distribution equipment. A total of 36 electric furnaces ranging in size from 30 to 310 kilowatts is used to provide the precise and accurately controlled heat treating systems necessary for the heating, forging, and finishing of the turbine buckets and blades.

Twenty-two rotary hearth furnaces are used in the forge shop to heat the steel billets before they are put in the press for forging. Additional furnaces are employed to temper and age the turbine buckets and blades. Several other furnaces of varying types and capacities are used in the solution heat treating, die-hardening, and die-drawing processes.

A protective atmosphere, which prevents the formation of oxides on the surface of the metal when it is hot, is maintained during the processing with a 10,000-cfh and two 6000-cfh neutraline atmosphere gas producers.

Tailored Power—GE also supplied a custom-engineered power distribution system for the plant. A 5000-kva outdoor packaged substation with 67,000-volts primary to 4360-volts secondary grounded Y was installed to fulfill the elec-

Put **YOUR** Men in this Picture...

**ERIE Board Drop Hammers
HELP HAMMERGANGS
DO THEIR BEST . . .**

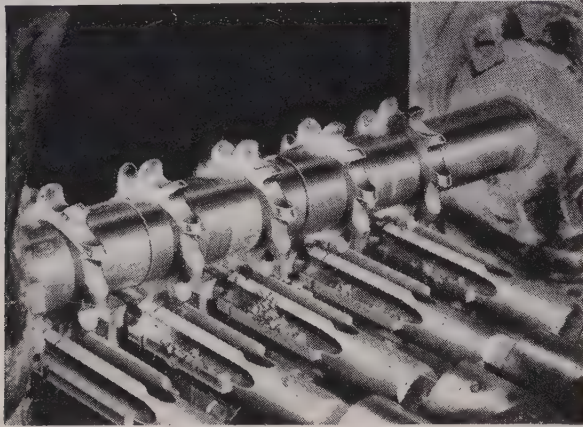


ON ERIE HAMMERS ALL STRESSED PARTS, UPPER WORKS,
FRAME AND ANVIL ARE STEEL.

ERIE FOUNDRY COMPANY • ERIE, PA.

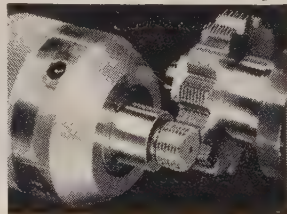
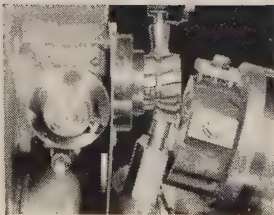
ERIE BUILDS Dependable HAMMERS

SPECIALLY DESIGNED Form Milling Cutters REDUCE MILLING COSTS



Get Peak Milling Efficiency with Special Form and Accuracy

Using special equipment and years of experience, Barber-Colman cutter engineers accurately develop and reproduce special forms on form-relieved cutter teeth to assure consistent duplication and accuracy in successive milling cuts. Forms are projected against 50 to 100 times size engineering layouts to check exact tolerances. Accuracy of form is maintained the full length of the cutter teeth, with close tolerances held on tooth indexing to permit cutters to be sharpened on automatic sharpening machines.



Accurate Unground Cutters

New techniques and heat treating methods enable you to take advantage of unground cutters in maintaining unusual production accuracy. These special form-relieved cutters control accuracy, finish and form automatically, making the job easier and more economical. Tool costs are reduced and set-up greatly improved.

Try Barber-Colman form-relieved cutters on your next production milling job and experience the satisfaction of fewer operations, simplified tooling, faster production and trouble-free machining.

SEND US PRINTS OR SAMPLES FOR ANALYSIS

Barber-Colman Company

COLMAN
III

GENERAL OFFICES AND PLANT,

876 ROCK STREET, ROCKFORD, ILLINOIS

trical needs of the entire plant.

The new substation included primary metering furnished by the power company, plus complete lightning protection, load rate control, and three secondary feeders—one for old plant and two for the new Aviation Division building.

A 2000-kva double-ended unit substation and three 1000-kva single unit substations are located at strategic points in the plant to furnish power for the thirty heating units used in the heat-treating process. Five 1000-kva substation transformers are Pyranol-filled to facilitate moving them indoors at a later date if desired.

New Grinding Method Found

Specializing in the application by physicists and metallurgists, of basic scientific principles to industry, Cambridge Applied Research Inc., Belmont, Mass., has just announced the availability of a unique process for solving an important problem recently encountered in certain industrial operations. Problem is the grinding of both the newer hard metals and "difficult-to-grind" metals.

This novel process has been developed for grinding such metals as the newer carbides, cobalt and zirconium metal and high temperature alloys, including the recent molybdenum and chromium base alloys as well as the usual titanium alloys.

Cambridge Applied Research invites inquiries regarding production runs that involve the grinding of metals that are usually hard to "hard-to-grind". Address of the organization is 60 White Street, Belmont 79, Mass.

Aluminum Coal Car Built

A corrosion-resistant aluminum coal mine car, with a body weight of 1614 pounds in contrast to a body weight of 4417 pounds for a similar car made of steel, has been developed jointly by Enterprise Wheel & Car Corp., Bristol, Va., and Reynolds Metals Co., Louisville. The lightweight car was exhibited at the American Mining Congress Show. The six-ton capacity car, designed in aluminum by Reynolds, will shortly be placed in service by Pocahontas Fuel Co.'s Ittmann mine near Mullins, W. Va.



McLouth

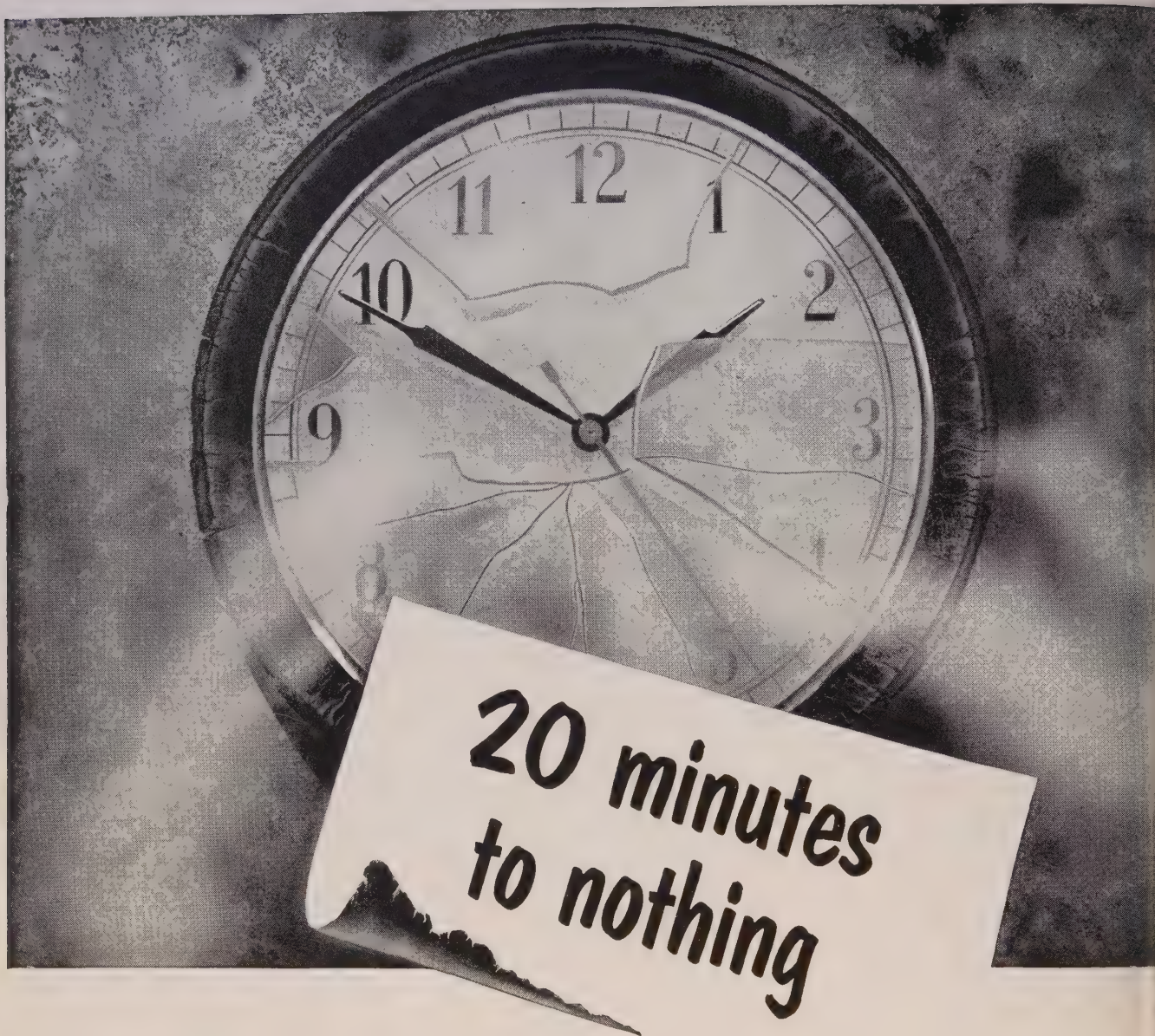
STAINLESS

Steel

For the product you make
today and the product you
plan for tomorrow.

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DETROIT, MICHIGAN

Manufacturers of Stainless and Carbon Steels



You could know the plant... 20 years of steady growth... 20 years of work, brains and money... then in 20 minutes a little fire got away and reduced it all to nothing.

But, your larger size fire hazards can be protected very efficiently at a reasonable cost, thanks to C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area... to flammable liquids, electrical equipment, storage spaces, manufacturing processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Flexibility is the keynote with these C-O-TWO Fire Extinguishing Systems... the low pressure carbon dioxide

storage tanks range in capacities from one to fifty tons... discharge facilities can either be manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these... especially installed to fit your particular needs. Future plant expansion is easily and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank and adding the supplementary discharge facilities at a later date.

Whether it's fire detecting or fire extinguishing... portable or built-in systems... C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

WHEN BUSINESS STOPS... INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today... our extensive experience over the years is at your disposal without obligation. Get the facts now!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeeze-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
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AFFILIATED WITH PYRENE MANUFACTURING COMPANY

3 Rubber-Base Plastic

Initial tests for the bronze substitute are passed. First use: Water meter boxes

A rubber-based plastic, Kralastic, has successfully completed the first phase of a nation-wide test as a substitute for bronze in water meter register boxes and covers, says R. R. Anderson, vice-president of the Worthington-Gamon Meter Division, Worthington Corp. During the last three months 10,000 meters equipped with Kralastic parts have been installed in every section of the country. To date there has not been a single failure of a test meter.

Full results of this national field test are not expected for approximately a year, since it will take this long to determine how the material stands up under corrosive conditions.

Critical Phase — Installation phase, however, was regarded as critical, Mr. Anderson says. Water meters are generally handled roughly during installation and the plastic part had to prove itself capable of withstanding this treatment.

Kralastic is a product of the Naugatuck Chemical Division, U.S. Rubber Co. It is also being used in the manufacture of corrosion-resistant pipe and other plumbing specialties.

Worthington-Gamon, Naugatuck Chemical and Shaw Insulator Co., which is producing the parts by injection molding, jointly developed the new register box and cover. More than two years of research went into the project, which was prompted by the chronic copper shortage.

Good Stability — Rubber-plastic product was tested after cast iron and other substitutes had proved unsatisfactory because of their susceptibility to corrosion. It is a tough plastic with good dimensional stability and high corrosion-resistance. Laboratory tests have already indicated that it will be comparable to bronze in service.

If the field tests confirm the laboratory results, the Kralastic parts may be made standard equipment. This will be the third use of plastic on Worthington-Gamon meters.

TWO MILLION WITHOUT A FAILURE!

parts: small connecting rods

alloy: "600" series metal, a high strength bearing bronze that contains no tin

quantity to date: over 2,000,000

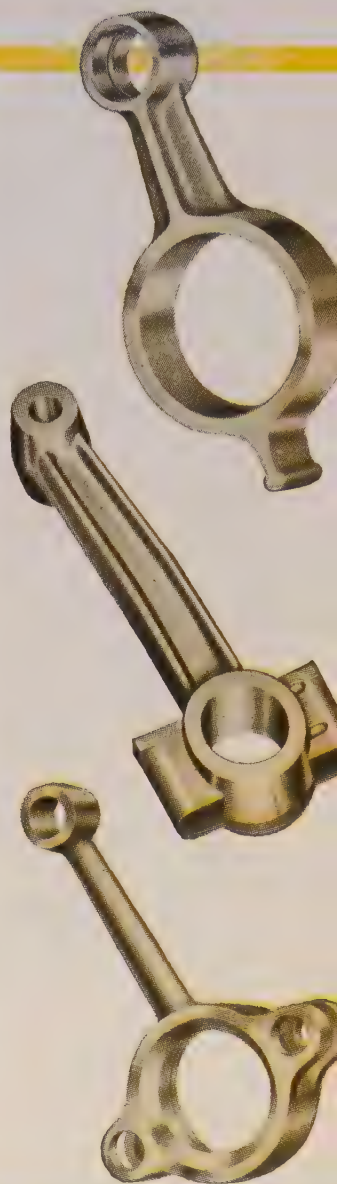
number of failures: none

forged by: Mueller Brass Co.

advantages: no bearing insert is necessary on either the wrist pin or crankshaft end because each rod acts as its own bearing. Dense homogeneous grain structure, close dimensional tolerances and high mechanical properties often permit redesigning for weight savings as high as 15% to 25%. "600" alloys have low coefficient of friction, high resistance to corrosion and tensile strength $2\frac{1}{2}$ times greater than cast phosphor bronzes.

uses: compressors, outboard motors, small high speed gasoline engines. Best results are obtained if they operate against hardened, ground and polished shafts.

"600" SERIES ROD is produced in standard 12-ft. mill lengths and a wide range of sizes and special shapes. This rod has a fine, uniform grain structure and the mechanical properties are rigidly controlled in the cold drawing process. Scrap loss is greatly reduced in machining operations because of the complete absence of defects. For complete information, write us today.



MUELLER BRASS CO.
PORT HURON 19, MICHIGAN

News About Created-Metals

Cuts Inventory 50% with Standard Tools

A leading appliance concern recently reported: . . . "As a result of suggesting to the responsible Process Engineering group standard tools which would perform the same service at an initial purchase saving, as well as a substantial saving in procurement time, our inventories of so-called special cutting tools have been reduced by more than 50%."

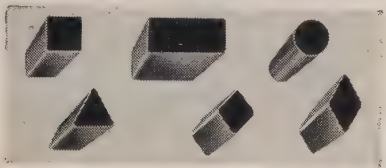
News about the new Carboloy MTI Plan indicates that it is designed to work similar benefits for cutting-tool users.

Details can be had by writing the Carboloy organization (address at right).

Complete Line of Insert Blanks

With the addition of two new diamond-shaped styles, the Carboloy line of carbide blanks for insert tools is now complete.

Available in 12 sizes, the styles



are square, rectangular, round, triangular, 55° diamond and 80° diamond. Blanks are available from Carboloy stocks or from Authorized Distributors.

New, Free Magnet Idea Kit for Shops

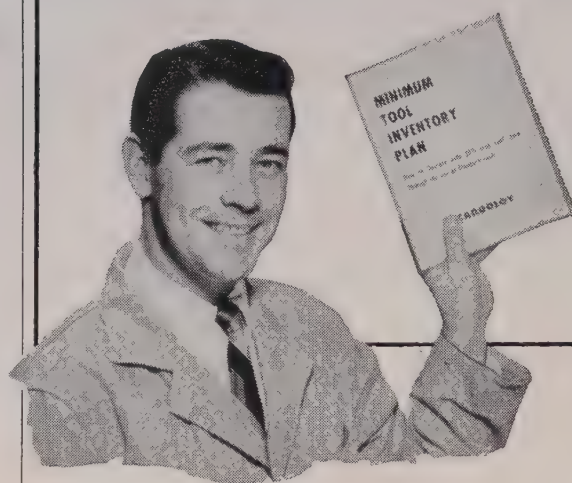


A handy, new literature kit showing the how's and why's of permanent magnets is currently sparking shop men to real savings in time and money.

The magnets have proved very effective as sheet steel separators, magnetic stands, tool-holding devices, sweepers' "pickup" tools and tool retrievers, to name a few uses.

Kit can be obtained free from Carboloy Department of General Electric Company. (See address at right.)

YOUR CARBOLOY FIELD REPRESENTATIVE SAYS . . .



"This reduces"

"It's an astoundingly simple, practical way for you to benefit from the low cost, wide adaptability and quick availability of Standard Carboloy Tools"

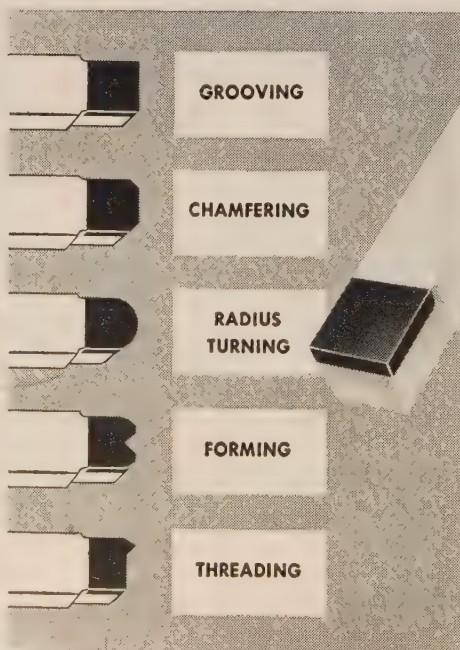
"Briefly, here's how the Minimum Tool Inventory Plan works: Instead of loading your shelves with special, made-to-print single-point carbide tools, you stock a lesser number of Carboloy 'Standards' . . . always available from distributors' stocks nearby. The MTI Plan shows you how to convert these Standards, in minutes, to handle about

80% of your special jobs.

"Your operating efficiency stays at par or improves. Your inventory goes down—about 30% or more. You cut out tooling delays, save initial tool investment and tool cost. You streamline your inventory procedures, reduce tool waste . . . get many other benefits shop-wide."

"Send coupon for MTI Plan Kit"

1 ADAPTABLE for up to 80% of your single-point tool jobs



There are only 11 styles of Standard Carboloy Tools . . . ready to be used "as is" for general turning, facing and boring . . . or quickly ground on regular carbide grinding equipment to fit those tricky special jobs. With Standards, you need fewer tools to do more jobs. Thus you operate on lower inventory.

2 AVAILABLE

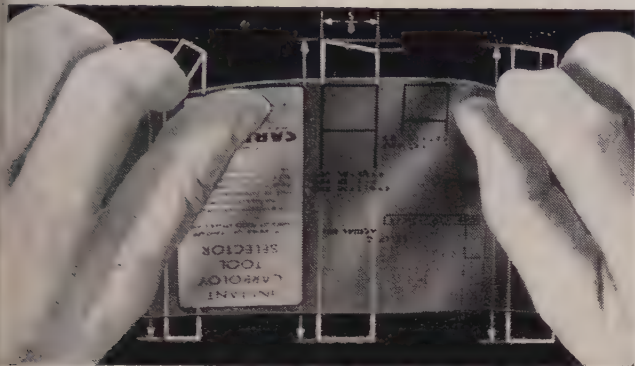
always from nearby Carboloy distributors

You can get off-the-shelf delivered on Carboloy Standards in 98 cities from coast to coast. No waits. No production delays as with special made-to-print carbide tools. Knowing you can get such speedy delivery of Carboloy Standards means you can cut your inventories still more.

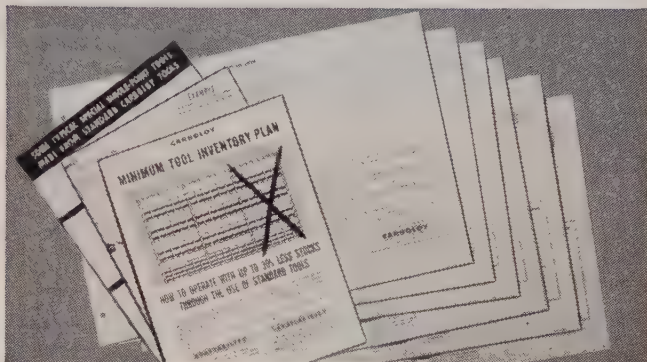
Above is a Style C Standard Carboloy Tool. It can be used "as is" for some jobs, or ground quickly to many special shapes. Five typical ways it can be adapted are shown.

new Carboloy MTI Plan

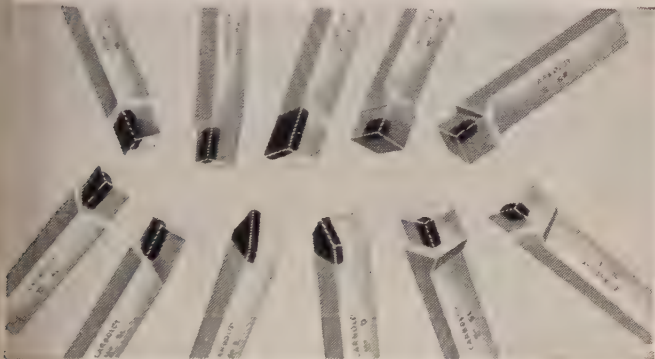
your tool stocks up to 30%"



3 Free MTI Plan Kit includes two handy tool selectors. You place them over your special prints, find out quickly which Carboloy Standard best adapts to each job. Selectors are of transparent plastic.



4 Kit also includes Plan Sheets in which to tabulate your Standard Tool selections, and easy-to-follow Grinder Sheet which outlines simple way to convert the Standards to your job specifications.



5 At once you'll see how you can operate with up to 30% fewer tool stocks. Next step is to phone your nearby Carboloy Distributor for swift delivery on *only* the Standard Carboloy Tools you need.



6 Should you have the slightest difficulty getting the plan rolling, a Carboloy sales representative will call at your plant, help you smooth out the kinks. His expert services won't cost you a penny.

**SEND COUPON TODAY—PINNED TO YOUR COMPANY LETTERHEAD—
FOR YOUR FREE MTI PLAN KIT**

**CARBOLOY
TOOLS
ARE STOCKED
COAST TO
COAST BY**



Look under "Tools" in the Yellow Pages of your local telephone book or in Thomas' Register for your nearby Carboloy Distributor. He has complete local stocks and services. Ask him about the MTI Plan.

"Carboloy" is the registered trademark for the products of the Carboloy Department of General Electric Company.

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

11141 E. 8 Mile Ave., Detroit 32, Michigan

- ☐ Please rush me, at no cost or obligation, your MTI Plan Kit.
☐ Have your sales representative call, without obligation.

Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ State _____



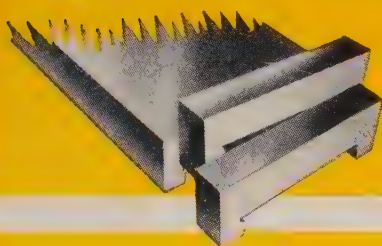
HOW HARD

are **OK**

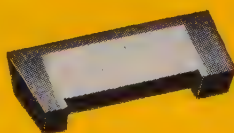
hardened ways?

ONE CUSTOMER SHOWED US BY:

1. Taking a section from an OK bedway



2. Making it into a "tool bit"



3. Then cutting metal with it (1045 cold rolled steel)



The Gisholt Machine Co., Madison, Wisconsin, who use Ohio Knife bedways exclusively on their ram and saddle type Turret Lathes, made the above dramatic test for one of their customers. **RESULT**—another sale of a famous Gisholt Turret Lathe.

This super uniform hardness on the wear surfaces to a depth of 3/16" (64-66 Rockwell "C") is the reason why more and more OK ways, gibs, races, etc., are being specified on new equipment and used as replacements where former parts have failed. OK ways are practically wear proof assuring constant accuracy throughout the life of your machine. Enjoy with many prominent machine tool builders and users, the long wearing, supreme accuracy, super hardness of OK ways. Many sizes, shapes, etc., available, or made to your specifications.

OK wear strips are now available in welded Ampco bronze.

(Reg. U. S. Pat. Office by Ampco Metal Inc.)

Manufacturers for the Metal Working Industry of:

SLITTER KNIVES • SHEAR BLADES • ROTARY SHEAR KNIVES
HARDENED SPACERS • HARDENED WAYS • GIBS
BALL RACES • BRONZE WAYS • WEAR STRIPS

Write for comprehensive Bulletin to Dept. C



THE OHIO KNIFE CO.

CINCINNATI 23, OHIO





Air-operated ratchet wrench is used for joining turbine bowls. Guiding factors in tool selection were uniform torque desirability with a minimum of worker fatigue



Cup wheel for this application was discovered to be better than straight grinder. Gives flatter, smoother finish and does not take off an excess amount of metal

Right Portable Tool Means Increased Production

There are so many that can do a good job that picking the best one is a chore. Design, speed and power are the chief considerations, according to these case histories

FROM the viewpoint of mechanical efficiency, there may be as many as four or five portable tools that will do a given job. On the basis of production, however, one of these tools may do a much better job than the others.

Actually, the right tool may increase output 10, 20 or even 50 per cent over the others. The selection, or application engineering of the right tool is, therefore, considerably important, particularly on jobs which are repeated continually.

Each shop standardizes its own operations, and therefore, an attempt to pinpoint in tabular form the best tools for particular jobs is difficult. But several actual engineering studies can reveal some of the points to look for in finding the best tool.

Grinding Example—A good case study which shows the importance of tool design and cutting accessory, is that of a welding department grinding off excess weld metal and spatter to make machine bases flat and smooth.

Previously, a straight type 6-inch air grinder was being used. The operator was experiencing some difficulty in holding the wheel on the weld. A vertical cup wheel grinder (spindle in vertical relationship to cup wheel with two handles 90 degrees apart) was tried. The vertical cup wheel grinder (spindle in vertical relationship to cup wheel with two handles 90 degrees apart) was tried. The vertical cup wheel contacted a larger area making it easier to finish the high spots flush to the surface.

Appearance of the metal also improved because the flat wheel ground smooth and did not dig grooves. Over-all result was that production in this area just about doubled.

Money Savers—Generally speaking, for jobs like cleaning up castings, welds, high spots, etc., the vertical type grinder, as opposed to the horizontal type, is a money saver. Wherever straight grinders are used—4, 6, or 8-inch diameter—a check should be made to

see if a vertical grinder with cup wheel will do the job faster and better. This idea of tool design investigation can well be extended to comparing different types of clutches, chucks, handle designs, and other tool components.

There is a great difference in the variety of 6-inch wheels available. With very few exceptions, all such wheels now commonly used on portable tools are of the high-speed type which has been made practicable by the use of rotary grinders which operate at higher speeds.

However, it will pay the individual foreman to try a variety of wheels on a given 6-inch job, keeping track of the time, of metal removed and comparing it with wheel cost. With today's high labor rates, it may be said that any wheel which cuts faster than another wheel is justified, even though the life is shorter, because the cost of the wheel per minute is a relatively small item compared to labor and overhead.

Speed Important—To illustrate

the point that even relatively minor differences in speed may have profound effect, take the case of a gray iron foundry that was cleaning cored holes in a casting with a 2¾-inch vitrified cone wheel. The cone was run at 6000 revolutions per minute on a grinder usually run at 6000 revolutions per minute with a 6-inch wheel.

A shift was made to a tool, essentially of the same type, but run at 8500 rpm, and about two pounds lighter in weight. This simple

change resulted in higher surface speed, reduction in grinding time of 20 per cent, and, because of the lighter weight, less operator fatigue. It was also found that wheel costs, because of higher speed under load, were cut 33⅓ per cent.

Check Safety Codes—In making the changeover to the higher speeds, care was taken to regard the safety codes which set correct speeds. It is highly important to follow these safety recommenda-

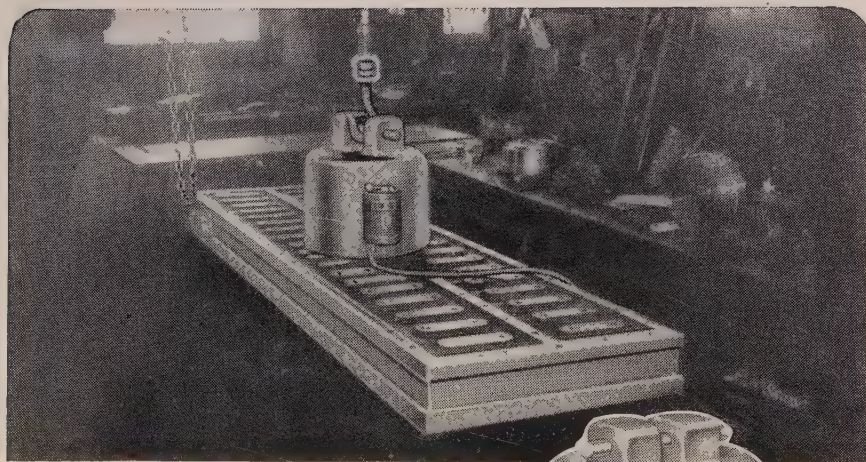
tions, because accidents occurring where the codes are violated often render the manufacturer liable to common lawsuits.

However, it is also important to operate the wheels at the maximum speed allowable under code. This gives the maximum production built into the wheels, improves metal removing ability and often prolongs the life of the wheel per ounce of metal removed.

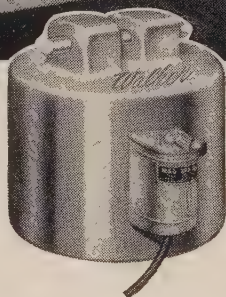
Check Power, Too—The amount of metal removed by portable tools is in direct relationship to the power delivered to the working accessory, bearing in mind that tool weight must be kept within reasonable limits.

Generally speaking, air tools will deliver more power per unit weight than will their electrically powered counterparts. The universal electric type develops one

Walker Does It Again-



Pound for pound, volume for volume, this is the strongest magnet made

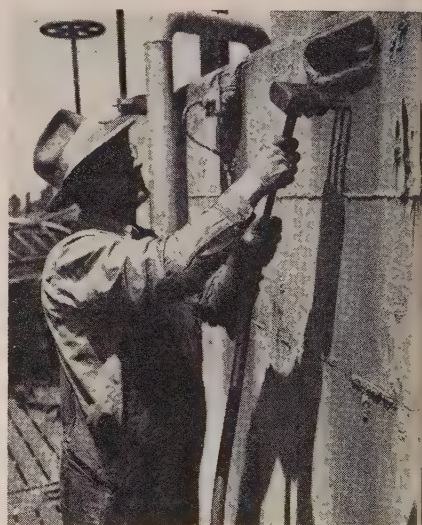


WALKER MAGNETS—The utilization of magnetic force under the most efficient conditions is the outcome of Walker's more than fifty years of research and development. . . . The 12" diameter Walker lifting magnet shown holds work up to 3000 pounds.

The Walker material is high in permeability and magnetized to complete saturation with equal flux distribution. . . . The Walker line includes contoured lifting magnets increasing the area of contact for special applications (for wire, pipe, etc.)

Original Designers and Builders of Magnetic Chucks
O. S. WALKER CO. Inc.
WORCESTER 6, MASSACHUSETTS

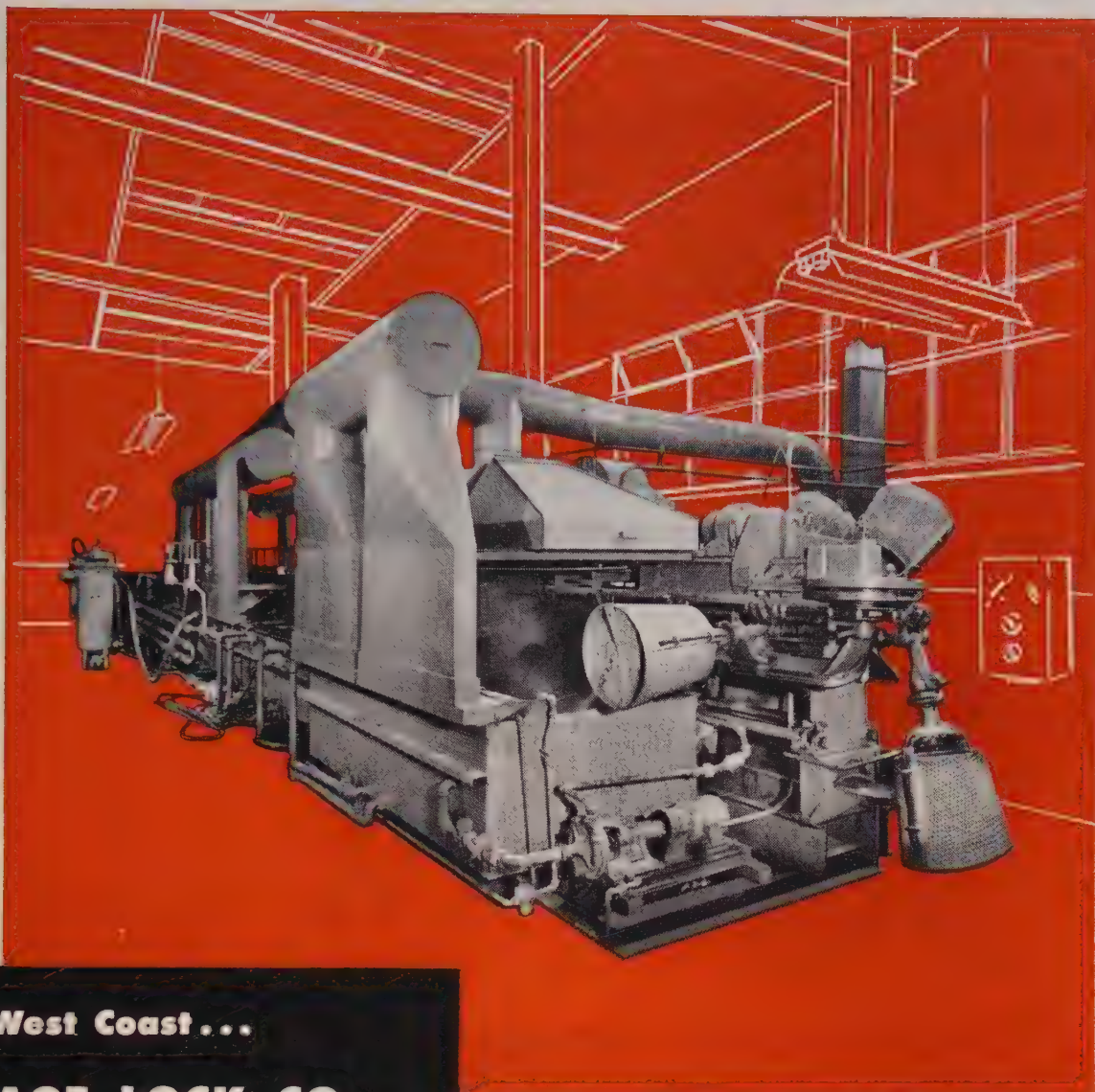
In Canada—Upton Bradeen & James, Ltd.



Multiple-piston chipping hammer covers three times area per hour of a single gun. There are many modifications possible with air tool design.

horsepower under load per 10 to 15 pounds tool weight; 180-cycle electric, one horsepower per 7 pounds weight; and, pneumatic, one horsepower per 3 to 5 pounds.

More Power Pays—A good example of the benefit of getting more power to the working accessory is that of a manufacturer of road construction equipment who was using a 6-inch grinder to clean welds. The power was low and consequently the grinder could develop a maximum of only 3700 rpm. A 6000 rpm air grinder with a 6-inch wheel was tried. Result was that grinding costs were cut



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Automatic Equipment!

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They produce locks and other types of builders' hardware. In every case, precision is absolutely necessary to assure the dependability for which Schlage is famed.

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Automatic Zinc Barrel Plating assures durability . . . while it gives HIGH PRODUCTION. A Stevens automatic barrel machine again supplied the answer to a manufacturer's production problem.

Call your Stevens Sales Engineer for help with your metal finishing problems. Or write direct. FREDERIC B. STEVENS INC., DETROIT 16, MICHIGAN.

*Visit us at the A.E.S. Convention,
 Room 414, Benjamin Franklin Hotel,
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Important in grinding wheels, too!



SIMONDS ABRASIVE CO.

Grinding Wheels



Smooth running! You can count on that with Simonds Grinding Wheels . . . your best bet for pay-off results on all your jobs. And whether they involve roughing, finishing, cutting off, polishing or sharpening, Simonds free data book can put you on the right track for the right wheels to save you time, money and materials. It describes our complete line and lists specifications of everything you need . . . grinding wheels, mounted wheels and points, segments and polishing grain.

*Write for data book and name
of your Simonds Distributor.*



Shift to lighter tool and more rpm's resulted in higher surface speed, reduction of grinding time by 20 per cent, lessening of operator fatigue

in half. At the same time working conditions were improved because the air grinder weighed 7 pounds less than the former electric one.

A similar situation became obvious in a foundry using flexible shaft grinders operating at 9000 rpm, with small mounted points for cleaning inside machine tool castings. Here again, an increase in speed to 20,000 rpm was possible by power conversion. An air grinder doubled production, fewer castings came back for recleaning, and tool maintenance was cut.

Other Factors — While speed, power, style and weight of tool and also the design or performance of the tool accessories are the major production influencing factors of tool selection, particular jobs may require special attention to other items such as: Ability to operate continuously, safety in operation, adaptability to different types of work, maintenance simplicity, etc.

Selecting the right tool is not simply a matter of changing one portable tool for another, but is, and equally important, a matter of changing hand tools to portable tools. As far as finding the tool to do a job is concerned, there is little, if any difficulty. Since the outbreak of World War II, the design of portable tools has progressed to include almost every conceivable metal-working job.

Prepared especially for STEEL by Compressed Air and Gas Institute

SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON
DISTRIBUTORS IN PRINCIPAL CITIES
Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N.Y. Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.



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WHILE YOU HELP SAVE

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FOR DEFENSE

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CLAD METALS

There's a two-way benefit in every coil of **SuVen[®]eer** Clad Metals: profitable economy for you, and conservation of critical materials for defense.

The *solid* copper or brass on steel represents a saving of 70% to 80% over equivalent gauges of the single non-ferrous metals, and brings the inner strength of steel to your copper or brass product application. The metals are bonded inseparably—you use your regular fabricating methods with this time-proved product. • Let us cooperate with you.

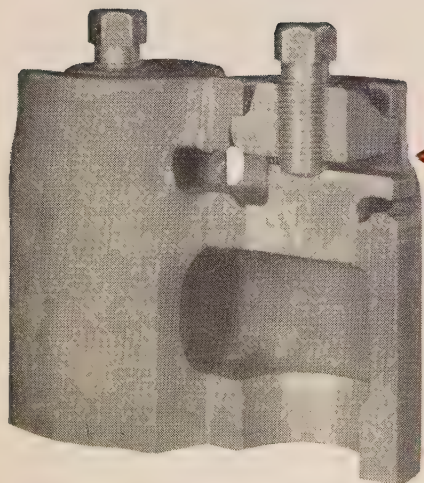
Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA




Spots Usually Spell Trouble

While that's true of little boys *and* castings, the condition is not equally obvious. In the case of castings, spots or flaws are usually unseen . . . invisible to normal inspection . . . but present nonetheless and ready to cause trouble.

That's why the highest standards of control and exacting inspection accompany a Sivyer casting through every step of its manufacture. This constant vigilance is your best assurance of flawless, precision steel castings.



The sign of a "healthy" casting. The Sivyer  is your guarantee of a safe, dependable casting — always look for it.

SIVYER

SPECIALISTS IN HIGH ALLOY AND

SPECIFICATION STEEL CASTING:

SIVYER STEEL CASTING COMPANY • MILWAUKEE  CHICAGO  MAIN OFFICE: 1675 SO. 43rd ST. • MILWAUKEE, WIS.

THE NATION'S No. 1 consumer of steel—the automobile industry—is taking precautions against a continuation into the fourth quarter of a shortage of the forms of steel it uses.

Proof: It is lining up conversion steel for fourth-quarter delivery.

The only time you arrange for conversion steel is when you think you won't be able to get enough steel through normal channels at regular mill prices. Conversion steel comes from excess semifinished steel that is purchased from one mill and moved to other mills that have excess finishing capacities. This moving around adds to the final cost of the steel.

NEEDED—Finished product needed most urgently by the auto industry is cold-rolled carbon steel sheets, with hot-rolled sheets and bars also of considerable importance.

In contrast to the automakers' views are estimates from other quarters that demand for steel will drop off in the last three months of this year. Those latter estimates vary: Some people think the decline will be just sufficient to put demand and supply into balance, while others believe the drop will be substantial enough to result in reduced production of steel.

CAUTIOUS—Most numerous among those believing steel demand will shrink in the last half of the year are officials of the steel producing companies. Roughly, they estimate steel ingot production for this year will range from 105 million to 110 million net tons, with 58 million tons in the first half.

Because steel industry officials are noted for conservatism in their outlook, some observers are inclined to discount the predictions of a drop in demand this year.

THEY REMEMBER—However, steel producers have seen heavy demand fall off rapidly. They

note that production of household appliances is exceeding demand and that appliance makers no longer show interest in conversion steel or any premium price steel. Appliance makers are not willing, however, to turn down any steel at regular mill prices.

Farm implement producers still are interested in conversion steel, but only to the extent that certain items are needed to balance supplies.

ODDITY—A midwestern mill has made a conversion deal on silicon sheets for use in electric motors. Conversion arrangements for silicon steel are rather unusual, and they reflect the good demand for fractional horsepower motors. A growing outlet for such motors is the air conditioning equipment industry.

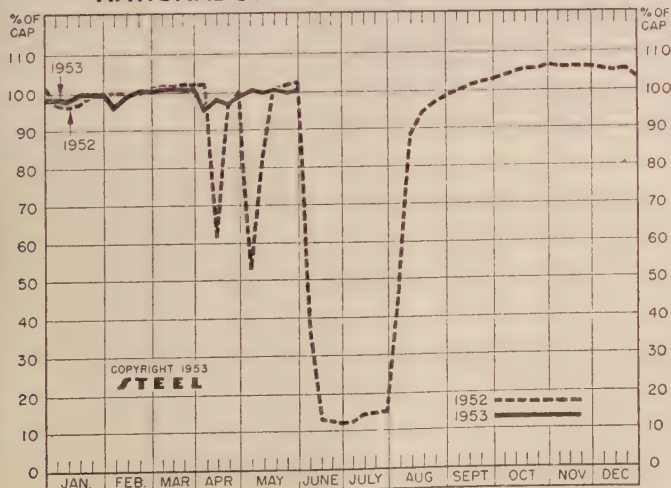
Being the biggest consumer of steel, the auto industry holds a very important key as to how long steel demand will be high. Steel mills are aware that balance between demand and supply—even a steel surplus—could come pretty fast if big users like auto and appliance companies should start trimming their orders.

STEP-BY-STEP—Even though steel industry officials expect a decline in steel demand in the latter part of the year they do not expect a slump. You might call it a leveling off. Balance in supply and demand will continue to be reached on a product-by-product basis. Merchant wire products, bolts and nuts and tool steel, for instance, already are plentiful.

Helping bring supply into line with demand will be a continued increase in the country's steel ingot capacity.

FULL SPEED—The industry is keeping all of its capacity in operation to meet the demand for steel, and in the week ended May 30 turned out steel for ingots and castings at a rate of 100.5 per cent of capacity.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended May 30	Change	Same Week 1952	Same Week 1951
Pittsburgh	99.5	+ 0.5	103	102
Chicago	106	0	106	108
Mid-Atlantic	97.5	0	96	101.5
Youngstown	105	0	105	105
Wheeling	102	+ 0.5	95.5	98.5
Cleveland	107	+ 2.5*	105.5	101.5
Buffalo	106.5	0	104	104
Birmingham	103	+ 2	102	100
New England	85	0	75	89
Cincinnati	100	+ 1.5	94.5	104
St. Louis	89.5	0	95.5	98.5
Detroit	109.5	+ 1.5	110	107.5
Western	111	+ 2	102.5	100.5
Estimated National Rate	100.5	+ 0.5	102.5	103

*Change from preceding week's revised rate. Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

Composite Market Averages

FINISHED STEEL PRICE INDEX:	May 28	May 19	Month	May
Bureau of Labor Statistics	1953	1953	Ago	Average
(1947-1949=100)	136.0	135.3	131.0	133.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)

Week Ended May 26, 1953

Units are 100 lb except where otherwise noted. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	\$4.075	Sheets, C.R. carbon	\$5.625
Track spikes	6.725	Sheets, galv.	6.765
Track bolts	10.175	Strip, C.R., carbon	5.100
Tie plates	4.925	Strip, C.R., stainless (lb)	0.333
Joint bars	5.075	Pipe, black, butt weld (100 ft)	7.500
Plates, carbon	4.285	Pipe, galv., butt weld (100 ft)	9.166
Structural shapes	4.400	Boiler tubes (100 ft)	32.178
Bars, tool steel (lb)	1.580	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	7.025	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.392
Bars, carbon	4.400	Wire, fence, galv.	7.017
Bars, reinforcing	4.250	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	6.275	Wire, barbed (80 rod spool)	6.160
Sheets, H.R., carbon	4.375	Woven wire fence (20 rod roll)	13.629

FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	May 28	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Index (1935-39 av.=100)	132.82	132.82	131.31	171.92	135.02
Index in cents per lb.	4.953	4.953	4.912	4.657	3.658

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*

Finished Steel NT	\$111.23	\$111.23	\$110.98	\$106.32	\$80.27
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.54	40.59
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	40.12
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	41.12
Steelmaking Scrap, GT	39.17	39.00	41.67	43.00	40.67

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	May 28	Week	Month	Year	5 Yrs.
	1953	Ago	Ago	Ago	Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.875
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.875
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.252	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.50
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.775
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.775
Shapes, del., Philadelphia	4.13	4.13	4.13	3.93	2.98
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.925
Plates, Chicago	3.90	3.90	3.90	3.70	2.925
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.775
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.775
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.50
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.50
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.76
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H. R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.775
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.775
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.60
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.735
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.86-5.10	3.725
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	5.125
Tin plate, box, Pittsburgh	\$8.95	\$8.95	\$8.95	\$8.70	\$6.65

SEMIFINISHED

Billets, forging, Pitts. (NT)	\$70.50	\$70.50	\$70.50	\$68.00	\$54.00
Wire rods, $\frac{1}{2}$ -%, Pitts. ..	4.425	4.425	4.425	4.10-30	3.175

PIG IRON, Gross Ton

Bessemer, Pitts.	\$55.50	\$55.50	\$55.50	\$53.00	\$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.75	42.17
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.25	42.67
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	39.38
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	45.09
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	58.00
Ferromanganese, Etna, Pa.	200.00†	200.00†	196.07†	188.00†	151.00*

*F.o.b. cars, Pittsburgh; 78-82% Mn, per gross ton. †74-76% Mn, per net ton. ‡73-82% Mn, per gross ton.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	\$39.50	\$39.50	\$43.00	\$44.00	\$40.25
No. 1 Heavy Melt, E. Pa.	41.50	41.50	42.50	42.50	42.50
No. 1 Heavy Melt, Chicago	36.50	36.00	39.50	42.50	39.25
No. 1 Heavy Melt, Valley	41.50	41.50	43.50	44.00	40.25
No. 1 Heavy Melt, Cleve.	39.00	39.00	41.25	43.00	39.75
No. 1 Heavy Melt, Buffalo	40.75	41.75	43.50	43.00	44.00
Rails Rerolling, Chicago	47.50	47.50	51.50	52.50	52.50
No. 1 Cast, Chicago	39.00	39.50	42.50	49.00†	69.00

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connsvl.	\$14.75	\$14.75	\$14.75	\$14.75	\$13.00
Beehive, Fdry, Connsvl.	17.00	17.00	17.00	17.50	15.125
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	19.50

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 186-187.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	\$58.50	\$57.00	\$57.50	\$58.00
New York, del.	60.78	61.28	61.28	61.28
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75

Birmingham District

Alabama City, Ala. R2	50.88	51.38	51.38	51.38
Birmingham R2	50.88	51.38	51.38	51.38
Birmingham S9	50.88	51.38	51.38	51.38
Woodward, Ala. W15	50.88	51.38	51.38	51.38
Cincinnati, del.	58.93	59.43	59.43	59.43

Buffalo District

Buffalo R2	54.50	55.00	55.50	55.50
Buffalo H1	54.50	55.00	55.50	55.50
Tonawanda, N.Y. W12	54.50	55.00	55.50	55.50
No. Tonawanda, N.Y. T9	54.50	55.00	55.50	55.50
Boston, del.	65.15	65.65	66.15	66.15
Rochester, N.Y., del.	57.52	58.02	58.52	58.52
Syracuse, N.Y., del.	58.62	59.12	59.62	59.62

Chicago District

Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	55.00	55.00	55.00
Indiana Harbor, Ind. I-2	54.50	55.00	55.00	55.00
So. Chicago, Ill. W14	54.50	55.00	55.00	55.00
So. Chicago, Ill. Y1	54.50	55.00	55.00	55.00
So. Chicago, Ill. U5	54.50	55.00	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.	61.30	61.30	61.30	61.30

Cleveland District

Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	55.00
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	55.00	55.00	55.50

Duluth I-3

Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	59.50	60.00	60.00	60.00
Fontana, Calif. K1	60.50	61.00	61.00	61.00
Granite City, Ill. G4	56.40	56.90	57.40	57.40
St. Louis, del. (inc. tax)	57.15	57.65	58.15	58.15
Ironton, Utah C11	54.50	55.00	55.00	55.00
Geneva, Utah C11	54.50	55.00	55.00	55.00
Lone Star, Tex. L8	50.50	51.00	51.00	51.00
Minnequa, Colo. C10	56.50	57.50	57.50	57.50
Rockwood, Tenn. C13	56.50	57.50	57.50	57.50

Pittsburgh District

Neville Island, Pa. P6	55.00	55.00	55.00	55.50
Pitts. N.&S. sides, Ambridge	55.00	55.00	55.00	55.50
Aliquippa, del.	56.37	56.87	56.87	56.87
McKees Rocks, del.	56.04	56.54	56.54	56.54
Lawrenceville, Homestead	56.66	56.66	56.66	56.66
Wilmerding, Monaca, del.	57.19	57.19	57.19	57.19
Verona, Trafford, del.	57.45	57.45	57.45	57.45
Brackenridge, del.	54.50	55.00	55.00	55.50
Bessemer, Pa. U5	54.50	55.00	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	55.00	55.00	55.50
McKeesport, Pa. N3	54.50	55.00	55.00	55.50
Monessen, Pa. P7	56.50	57.00	57.00	57.00
Sharpsville, Pa. S6	56.50	57.00	57.00	57.00
Steelton, Pa. B2	56.50	57.00	57.00	57.00
Swedeland, Pa. A3	56.50	57.00	57.00	57.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	60.47	60.47
Troy, N.Y. R2	56.50	57.00	57.00	57.00

Youngstown District

Hubbard, O. Y1	54.50	55.00	55.00	55.00
Youngstown Y1	54.50	55.00	55.00	55.00
Youngstown U5	54.50	55.00	55.00	55.00
Mansfield, O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over. Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton and each additional 0.25%, add \$1 per ton.

BLAST FURNACE SILVER PIG IRON, Gross Ton

(Base 6.0-8.50% silicon; add \$1.50 for each 0.5% Si)

Jackson, O. G2, J1	\$65.00
Buffalo H1	66.00

ELECTRIC FURNACE SILVER PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1 for each 0.5% Mn over 1%; \$2 per gross ton premium for 0.045% max P)

Niagara Falls, N.Y. P15	\$91.00
Keokuk, Iowa, Openhearth & Fdry, freight allowed K2	92.00
Keokuk, OH & Fdry, 12 1/2 lb piglets, 16% Si, frt. allowed K2	95.00
Wenatchee, Wash., OH & Fdry, freight allowed K2	92.00

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	\$68.00
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LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, Intermediate, A7	\$59.00
Steelton, Pa. B2	62.00
Philadelphia, delivered	66.00
Troy, N.Y. R2	62.00

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 29.75-30.00c, Conn. Valley; Lake nom.; foreign electrolytic, del. 29.75-30.00c.

Brass Ingots: 85-5-5-5 (No. 115) 26.00c; 80-10-2 (No. 215) 34.75c; 80-10-10 (No. 305) 40.00c; No. 1 yellow (No. 405) 21.25c. Prime Western 11.00c; brass special 11.25c, intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

Lead: Common 13.05c; chemical 13.15c; cor-rod 13.15c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb carlots.

Secondary Aluminum: Piston alloys 22.50-30.00c; No. 12 foundry alloy (No. 2 grade) 22.25-22.75c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.25-24.00c; Grade 2, 22.25-23.00c; Grade 3, 21.50-22.25c; Grade 4, 20.50-21.25c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt RFC, 121.50c; outside market 96.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, \$195-198, per 76-lb flask.

Cadmium: "Regular" straight or flat forms, \$2 del.; special or patented shapes \$2.15.

Beryllium-Copper: 3.75-4.25% Be, \$40.60 per lb of contained beryllium, with balance as copper at market price on date of shipment, f.o.b. Reading, Pa., or Elmore, O.

Cobalt: 97.99%, \$2.40 per lb for 500 lb (kegs); \$2.42 per lb for 100 lb (case); \$2.47 per lb under 100 lb.

Gold: U. S. Treasury, \$35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: \$90-\$93 per ounce from refineries.

Palladium: \$23-\$24 per troy ounce.

Iridium: \$165-\$175 per troy ounce.

Titanium (sponge form): \$5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

Sheet: Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18%, 59.84; phosphor-bronze grade A, 5%, 70.50.

Rod: Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85%, 46.80; 80%, 45.68.

Seamless Tubing: Copper 50.42; yellow brass 45.78; commercial bronze, 90%, 51.32; red brass, 85%, 49.92.

Wire: Yellow brass 43.16; commercial bronze, 95%, 50.18; 90%, 49.05; red brass, 85%, 47.40; 80%, 46.23; best quality brass, 44.72.

(Base prices, effective Apr. 1, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.53; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.85; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire del., 15,000 lb or more 43.93; l.c.l., 44.63.

ALUMINUM
(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)
Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, Sheet In., Inc. Base*	Flat Sheet Base	Coiled Sheet Base	Coiled Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.658	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.825	39.8	43.2
1.688-2.000	39.8	...

LEAD
(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more \$18.25 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils \$18.25 per cwt. Traps and bends: List prices plus 30%.

ZINC
Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL
(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL
(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM
Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM
(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forgings, \$6; hot-rolled and forged bars, \$8.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled, oval, carbonized, carloads 81.00c; 5000 to 29,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 499 lb, 89.00c, f.o.b. Cleveland.

Nickel Chloride: In 100 lb bags; 10,000 lb and over, 37.00c; 5000 to 9900 lb, 38.00c; 400 to 4900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers \$1.10 per lb; 100 or 350 lb drums only, 100 to 600 lb \$1.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on \$1.215 tin.

Tin Anodes: Bar, 1000 lb and over, \$1.42; 500 to 999 lb, \$1.425; 200 to 499 lb, \$1.43; less than 200 lb, \$1.445. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on \$1.215 tin.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb \$1.11; more than 2000 lb, \$1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on \$1.215 tin.

Stannous Chloride (Anhydrous): In 400 lb bbl, \$1.25; 100 lb kegs \$1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more. Based on \$1.215 tin.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time of any or all kinds of scrap, add 1 cent per pound.)

	Clean	Red	Clean
	Heavy	Ends	Turnings
Copper	28.625	28.625	27.875
Yellow Brass	21.375	21.125	19.625
Commercial Bronze			
95%	27.250	27.000	26.500
90%	26.125	25.875	25.375
Red Brass			
85%	25.125	24.875	24.375
80%	24.125	23.875	23.375
Best Quality (71-80%)	22.500	22.250	21.750
Muntz metal	20.000	19.750	19.250
Nickel silver, 10% ..	25.250	25.000	12.625
Phos. Bronze, A	30.625	30.375	29.375
Naval Brass	20.000	19.750	19.250
Manganese Bronze ..	20.000	19.750	19.250

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 24.50-25.00; No. 2 copper 23.00-23.50; light copper 21.50-22.00; refinery brass (60% copper) per dry copper content 20.00.

INGOT MAKERS' COPPER AND BRASS

SCRAP BUYING PRICES

(Cents per pound, carlots, delivered)

No. 1 copper 24.00-25.00; No. 2 copper, 22.50-23.50; light copper 17.50-18.00; No. 1 composition borings 17.50-18.00; No. 1 composition solids, 18.00-18.50; radiators, 13.50-14.00, nom.; heavy yellow brass solids, 14.00-14.25; yellow brass turnings 13.00.

SMELTERS' BUYING PRICES FOR

SCRAP ALUMINUM

(Carlots, delivered)

2S aluminum clippings, 15.50-16.50c; mixed clippings, 13.00-14.75c; old aluminum sheet, 13.00-13.50; old aluminum cast, 13.00-13.50c; borings and turnings, 13.00-14.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 23.00-23.50; No. 2 20.50-21.00; light copper 18.50-19.00; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 10.00; new brass clippings 17.50; No. 1 brass rod turnings 16.00; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 16.50; auto radiators, unsweated 13.00; cocks and faucets 15.00; brass pipe 16.00.

Aluminum: Clippings 2S 13.00; old sheets 9.00; crankcase 9.00; borings and turnings 6.50; pistons and struts 6.50.

Tin: No. 1 pewter 55.00; block tin pipe 80.00; No. 1 babbitt 45.00.

Lead: Heavy 10.25-10.75; battery plates 5.75-6.00; linotype and stereotype 12.50-13.25; electrolyte 10.75-11.50; mixed babbitt 11.50-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Nickel: Sheets and clips \$1.00; rolled anodes \$1.00; turnings 85.00; rod ends \$1.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Alu- minum	An- timony	Nickel	Silver
May 26-28	29.75-30.00	13.05	11.00	96.00	20.50	34.50	60.00	85.25
May 25	29.75-30.00	12.80	11.00	97.25	20.50	34.50	60.00	85.25
May 22-23	29.75-30.00	12.80	11.00	95.75	20.50	34.50	60.00	85.25
May 21	29.75-30.00	12.80	11.00	97.50	20.50	34.50	60.00	85.25
May 20	29.75-30.00	12.80	11.00	98.50	20.50	34.50	60.00	85.25
May 19	29.75-30.00	12.80	11.00	100.00	20.50	34.50	60.00	85.25
May 18	29.75-30.00	12.80	11.00	100.00	20.50	34.50	60.00	85.25
May 15-16	29.75-30.00	12.80	11.00	98.50	20.50	34.50	60.00	85.25
May 14	29.75-30.00	12.30	11.00	98.00	20.50	34.50	60.00	85.25
May 13	29.75-30.00	12.30	11.00	97.00	20.50	34.50	60.00	85.25
May 11-12	29.75-30.00	12.30	11.00	96.50	20.50	34.50	60.00	85.25
May 8-9	29.75-30.00	12.30	11.00	99.00	20.50	34.50	60.00	85.25
May 6-7	29.50-30.00	12.30	11.00	100.00	20.50	34.50	60.00	85.25
May 5	29.50-30.00	12.30	11.00	98.00	20.50	34.50	60.00	85.25
May 4	29.50-30.00	12.30	11.00	96.50	20.50	34.50	60.00	85.25
Apr. Avg.	30.755	12.473	11.00	102.567	20.50	34.50	60.00	85.25

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

The Metal Market

Basic aluminum policy of the new administration is taking shape in Washington. The government will want payment in aluminum for expansion help to producers

THEY DON'T make aluminum in Washington, but they might just as well. That's where most of the big decisions are made—decisions that bear substantially on the light metal going through your plant.

From the seemingly endless conferences and meetings in the capital, basic aluminum policy of the neophyte administration is taking shape. Most significant feature of that policy is this—the government wants payment in aluminum for its expansion help to producers.

Drawing the Line—ODM did soften the blow of increased stockpiling in the third quarter to allow producers time to catch up with civilian backlogs—that was expected. But the defense agencies have been putting off serious stockpiling for over a year and feel they have to draw the line somewhere if the purposes of defense expansion in aluminum are to be achieved.

One condition attached to expansion aid gives the government option to buy at market price total output from new plants for five years. From the tenor of recent actions, U. S. aluminum producers realize what might happen to their civilian business if that option is exercised when demand is strong.

Look North—Because the possibility of shortage overbalances the possibility of surpluses in coming years, it's no wonder that attitudes toward Canadian imports have softened. Two surprising deals announced last week were contracts by Aluminum Import Corp., sales agent for Aluminum Co. of Canada, with Alcoa and Kaiser Aluminum & Chemical Corp. to supply 786,000 tons of primary aluminum to the U. S. companies between 1953 and 1958.

About 75 per cent of this amount will be delivered in 1955 and later. Alcoa will take 600,000 tons and Kaiser 186,000 tons. By way of comparison, the total tonnage involved in the 6-year supply contract tops the entire U. S. yearly capacity at the time of Korea.

Independents Too—To protect its position with independent fabricators in this country—who take about one-third of their ingot requirements from Alcan—Aluminum Import cushioned this contract announcement

with a prior statement that Alcan will specifically reserve for independents an additional 110,000 tons of aluminum yearly for the next several years.

Forward contracts held by the company through 1959 already total 275,000 tons. Under the new arrangement, another 495,000 tons will be

Lead Fights Back

Lead producers are seizing the bull by the horns, attempting to escape the domination of price by the London Metal Exchange. Last week lead advanced another quarter-cent, justified by domestic demand but not by London quotations. If the exchange's influence can be avoided, so can frequent price fluctuations, leadmen believe. Last week's shift makes an even dozen this year.

made available if needed. Back in Washington, legislators are pressing Treasury Secretary George Humphrey to drop temporarily the 1.5 cent tariff on aluminum imports, but the Alcan announcements should chill whatever prospects there were for putting the idea across.

Third Round Stymie—Financing still stalls two of the proposed entrants in aluminum expansion program's third heat. But Harvey Machine Co. won't be denied. It signed with General Services Administration to start building 54,000-ton primary facilities in June, with completion scheduled by May, 1955.

Harvey already has a certificate of necessity from DPA and a power contract with the Bonneville Power Administration. Harvey will build an aluminum plant and—following the company's often unorthodox but successful procedures—a two-pot-line reduction plant, generally considered uneconomical for such capacity.

Other Possibilities—Harvey evidently found sufficient private capital to get started, but Olin Industries and Wheland Co. haven't. GSA Administrator Edmund F. Mansure says, "I hope we can get additional aluminum capacity without government

assistance beyond the very real assistance provided under rules laid down by ODM."

If Olin and Wheland have to renege, the third round will be nearly 150,000 tons short. Reynolds wants to expand its Lister Hill, Ala., facilities by stretching potlines as was done at Longview, Wash., and could do it in a year. Capacity would be increased from 50,000 tons to 83,000 tons. The company says it has enough power available too. If Reynolds got a green light, though, Alcoa and Kaiser might want a similar opportunity.

Check on Copper Stocks

Copper buyers are taking a look at their stocks to avoid getting caught with heavy inventories over vacation season in case there's a revision of fabricator's pricing formula or weakening of primary copper prices. Scrap intake by brass and wire mills and foundries is double the pre-control rate but stocks of the red metal in fabricators' hands is best in two years. Copper controls are falling like leaves.

Spread of 1.25 cents in quotations of brass and bronze ingotmakers bidding on new orders signals further weakening of the market; a week ago the spread was only about a half-cent. Some customers are asking that ingots be priced at today's price or market price at time of shipment, whichever is lower.

Nonferrous Briefs

New \$1.5 million automatic scrap refining department at George Sahm Metals Co., Philadelphia, is now operating. Monthly capacity is 1,125,000 pounds of aluminum ingot, 1 million pounds of brass and bronze ingots, and over 500,000 pounds of zinc alloy ingots.

Sizable black market in nicked scrap has sprung up. Currently quoted at about \$1.00 a pound, some scrap is moving at double that figure. Japanese nickel still sells well above about four times market price.

Rome Cable Co. says its defense shipments have fallen from 25 to 16 per cent of total shipments.

Copper scrap has moved up about 2 cents a pound from the plateau struck after price control went off, but it's still below the comparable price of refined. Custom smelter reluctantly raised scrap buying price 1.5 cents for top grades last week.

MORE TIME FOR STEELMAKING... LESS TIME ON REPAIRS

You can keep steel-mill machinery on the job longer by using HAYNES hard-facing alloys to protect wearing parts. With hard-faced parts, you will have less down time and fewer repairs—more time for steelmaking. Illustrated here are some typical savings that have been made.

If you would like a copy of our hard-facing manual, which gives further information on the use of HAYNES hard-facing alloys, fill out the coupon below and mail it to us. For on-the-job help, get in touch with our nearest district office.

1 A yearly application of HAYNES STELLITE alloy No. 1 on this mud-gun screw for blast-furnace tap holes has eliminated monthly maintenance.

2 HAYNES STELLITE alloy No. 6 on the points of soaking-pit tongs has increased their life 19 times. Some hard-faced tongs have lasted as much as 50 times longer than unprotected ones.

3 The life of blooming mill shears has been increased 10 times by applying HASTELLOY alloy C on the cutting edge.

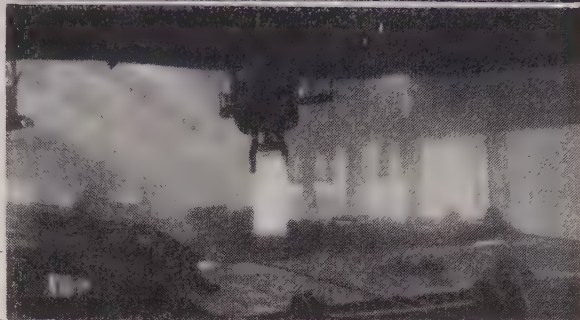
4 Entry guides for a bar-reduction mill used to wear out after handling 40 tons of steel. Guides hard-faced with HAYNES STELLITE alloy No. 6 last 4 to 5 times longer than unprotected ones.

5 Three years ago, some cone rollers in this bar-cooling bed were faced with HAYNES alloy No. 92. They are still in service.

1



2



3



4



5



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COMPANY _____

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on pages 194-195.

INGOTS, Carbon, Forging (NT)
Fontana, Calif. K1\$81.00
Munhall, Pa. U554.00
Seattle S2475.00

INGOTS Alloy (NT)
Detroit R7\$57.00
Fontana, Calif. K183.00
Houston S565.00
Midland, Pa. C1857.00
Munhall, Pa. U557.00

BILLETS, BLOOMS & SLABS

Carbon, Re-rolling (NT)
Bessemer, Pa. U5\$59.00
Clairton, Pa. U559.00
Ensley, Ala. T259.00
Fairfield, Ala. T259.00
Fontana, Calif. K178.00
Gary, Ind. U559.00
Johnstown, Pa. B259.00
Lackawanna, N.Y. B259.00
Munhall, Pa. U559.00
So. Chicago, Ill. U559.00
So. Duquesne, Pa. U559.00

Carbon, Forging (NT)
Bessemer, Pa. U5\$70.50
Buffalo R270.50
Canton, O. R270.50
Clairton, Pa. U570.50
Cleveland R270.50
Conshohocken, Pa. A377.50
Detroit R773.50
Ensley, Ala. T270.50
Fairfield, Ala. T270.50
Fontana, Calif. K189.50
Gary, Ind. U570.50
Geneva, Utah C1170.50
Houston S578.50
Johnstown, Pa. B270.50
Lackawanna, N.Y. B270.50
Los Angeles B389.50
Munhall, Pa. U570.50
Seattle B3, S2489.50
So. Chicago R2, U5, W1470.50
So. Duquesne, Pa. U570.50
So. San Francisco B389.50

Alloy, Forging (NT)
Bethlehem, Pa. B2\$76.00
Buffalo R276.00
Canton, O. R276.00
Canton, O. T778.60
Conshohocken, Pa. A383.00
Detroit R779.00
Fontana, Calif. K195.00
Gary, Ind. U576.00
Houston S584.00
Ind. Harbor, Ind. Y176.00
Johnstown, Pa. B276.00
Lackawanna, N.Y. B276.00
Los Angeles B396.00
Massillon, O. R276.00
Midland, Pa. C1876.00
Munhall, Pa. U576.00
Seattle S2496.00
So. Chicago R2, U5, W1476.00
So. Duquesne, Pa. U576.00
Struthers, O. Y176.00
Warren, O. C1776.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2\$87.50
Canton, O. R287.50
Cleveland R287.50
Fontana, Calif. K1108.50
Gary, Ind. U587.50
Massillon, O. R387.50
So. Chicago, Ill. R287.50
So. Duquesne, Pa. U587.50

SHEET BARS (NT)
Fontana, Calif. K1\$93.18
SKELP
Alquippa, Pa. J53.65
Munhall, Pa. U53.55
Warren, O. R23.55
Youngstown R2, U53.55

WIRE RODS
Alton, Ill. L14.70
Alabama City, Ala. R24.325
Buffalo W124.325
Cleveland A74.325
Donora, Pa. A74.325
Fairfield, Ala. T24.325
Fontana, Calif. K15.125
Houston S54.725
Johnstown, Pa. B24.325
Joliet, Ill. A74.325
Kansas City, Mo. S54.665
Los Angeles B35.125
Minnequa, Colo. C104.575
Monessen, Pa. P74.525
No. Tonawanda, N.Y. B114.325
Pittsburgh, Calif. C114.975
Portsmouth, O. P124.525
Roebbing, N.J. R54.425
So. Chicago, Ill. R24.325
Sparrows Point, Md. B24.425
Sterling, Ill. (1) N154.325
Struthers, O. Y14.325
Torrance, Calif. C115.125
Worcester, Mass. A74.625

SHEET STEEL PILING
Ind. Harbor, Ind. I-24.675
Lackawanna, N.Y. B24.675
Munhall, Pa. U54.675

So. Chicago, Ill. U54.675

STRUCTURALS

Carbon Steel Stand. Shapes
Alabama City, Ala. R23.55
Alquippa, Pa. J53.55
Bessemer, Ala. T23.55
Bethlehem, Pa. B23.90
Clairton, Pa. U53.85
Fairfield, Ala. T23.85
Fontana, Calif. K14.50
Gary, Ind. U53.85
Geneva, Utah C113.85
Houston S54.25
Ind. Harbor, Ind. I-23.85
Johnstown, Pa. B23.90
Kansas City, Mo. S54.45
Lackawanna, N.Y. B23.90
Los Angeles B34.45
Minnequa, Colo. C104.30
Munhall, Pa. U53.85
Niles, Calif. (22) P14.66
Phoenixville, Pa. P44.95
Seattle B34.50
So. Chicago, Ill. U5, W143.85
So. San Francisco B34.40
Torrance, Calif. C114.45
Weirton, W. Va. W64.10

Wide Flange
Bethlehem, Pa. B23.90
Clairton, Pa. U53.85
Fontana, Calif. K15.05
Lackawanna, N.Y. B23.90
Munhall, Pa. U53.85
So. Chicago, Ill. U53.85

Alloy Stand. Shapes
Clairton, Pa. U54.725
Fontana, Calif. K16.125
Gary, Ind. U54.725
Munhall, Pa. U54.725
So. Chicago, Ill. U54.725

H.S., L.A. Stand. Shapes
Alquippa, Pa. J55.80
Bessemer, Ala. T25.80
Bethlehem, Pa. B25.80
Clairton, Pa. U55.80
Fairfield, Ala. T25.80
Fontana, Calif. K16.45
Gary, Ind. U55.80
Geneva, Utah C115.80
Ind. Harbor, Ind. I-25.80
Ind. Harbor, Ind. Y16.20
Johnstown, Pa. B25.80
Lackawanna, N.Y. B25.80
Los Angeles B36.35
Munhall, Pa. U56.35
So. Chicago, Ill. U56.35
So. San Francisco B36.30
Struthers, O. Y16.30

H.S., L.A. Wide Flange
Bethlehem, Pa. B25.80
Lackawanna, N.Y. B25.80
Munhall, Pa. U55.75
So. Chicago, Ill. U55.75

BEARING PILES

Munhall, Pa. U53.85
So. Chicago, Ill. U53.85

PLATES, High-Strength Low-Alloy
Alquippa, Pa. J55.95
Bessemer, Ala. T25.95
Clairton, Pa. U55.95
Cleveland J5, R25.95
Conshohocken, Pa. A36.20
Ecorse, Mich. G56.90
Fairfield, Ala. T25.95
Fontana, Calif. (30) K16.65
Gary, Ind. U55.95
Geneva, Utah C115.95
Ind. Harbor, Ind. I-25.95
Ind. Harbor, Ind. Y16.45
Johnstown, Pa. B25.95
Munhall, Pa. U55.95
Pittsburgh J55.95
Seattle B36.85
Sharon, Pa. S35.95
So. Chicago, Ill. U55.95
Sparrows Point, Md. B25.95
Warren, O. R25.95
Youngstown Y16.45
Youngstown U55.95

PLATES, Open-Heard Alloy
Claymont, Del. C225.35
Coatesville, Pa. L75.75
Conshohocken, Pa. A35.55
Fontana, Calif. K16.20
Gary, Ind. U55.25
Johnstown, Pa. B25.25
Munhall, Pa. U55.25
Sharon, Pa. S35.70
So. Chicago, Ill. U55.25
Sparrows Point, Md. B25.25

FLOOR PLATES
Cleveland J54.95
Conshohocken, Pa. A34.95
Ind. Harbor, Ind. I-24.95
Munhall, Pa. U54.95
So. Chicago, Ill. U54.95

PLATES, Ingot Iron
Ashland, c.l. (15) A104.15
Cleveland, c.l. R24.50
Warren, O., c.l. R24.50

PLATES, Carbon Steel
Alabama City, Ala. R23.90
Alquippa, Pa. J53.90
Ashland, Ky. (15) A103.90
Bessemer, Ala. T23.90
Clairton, Pa. U53.90
Claymont, Del. C224.35
Cleveland J5, R23.90
Coatesville, Pa. L74.35
Conshohocken, Pa. A34.35
Ecorse, Mich. G54.45
Fairfield, Ala. T23.90
Fontana, Calif. (30) K14.55
Gary, Ind. U53.90
Granite City, Ill. G44.60
Geneva, Utah C113.90
Harrisburg, Pa. C56.50
Houston S54.30
Ind. Harbor, Ind. I-2, Y13.90
Johnstown, Pa. B23.90
Lackawanna, N.Y. B23.90
Minnequa, Colo. C104.70
Munhall, Pa. U53.90
Pittsburgh J53.90
Seattle B34.80
Sharon, Pa. S34.15
So. Chicago, Ill. U5, W143.90
Sparrows Point, Md. B23.90
Steubenville, O. W103.90
Warren, O. R23.90
Weirton, W. Va. W64.20
Youngstown R2, U5, Y13.90

PLATES, Carbon A.R.
Fontana, Calif. K15.70
Geneva, Utah C115.05

PLATES, Wrought Iron
(Add 4.7% to base, extras)
Economy, Pa. B148.60

BARS, Hot-Rolled Carbon
Alabama City, Ala. R23.95
Alquippa, Pa. J53.95
Alton, Ill. L14.50
Atlanta, Ga. A114.25
Bessemer, Ala. T23.95
Buffalo R23.95
Canton, O. R23.95
Clairton, Pa. U53.95
Cleveland R23.95
Detroit R74.10
Ecorse, Mich. G54.30
Emeryville, Calif. J74.70
Fairfield, Ala. T23.95
Fontana, Calif. K14.65
Gary, Ind. U53.95
Houston S54.35
Ind. Harbor, Ind. I-2, Y13.95
Johnstown, Pa. B23.95
Kansas City, Mo. S54.55
Lackawanna, N.Y. B23.95
Los Angeles B34.65
Milton, Pa. B64.55
Minnequa, Colo. C104.40
Niles, Calif. P14.65
No. Tonawanda, N.Y. B113.95
Pittsburgh, Calif. C114.65
Pittsburgh J53.95
Portland, Ore. O44.70
Seattle B3, N14, S244.70
So. Chicago R2, U5, W143.95
So. Duquesne, Pa. U53.95
So. San Francisco, Calif. B34.70
Sterling, Ill. N154.55
Struthers, O. Y13.95
Torrance, Calif. C114.65
Weirton, W. Va. W64.10
Youngstown R2, U53.95

BAR SHAPES, Hot-Rolled Alloy

Clairton, Pa. U54.925
Gary, Ind. U54.925
Youngstown U54.925

BAR SIZE ANGLES; S. Shapes
Alquippa, Pa. J53.95
Atlanta A114.25
Niles, Calif. P14.65
San Francisco S75.00

BAR SIZE ANGLES; H.R. CARBON
Bethlehem, Pa. B24.15

BARS, Hot-Rolled Alloy
Bethlehem, Pa. B24.675
Buffalo R24.675
Canton, O. T74.72
Canton, O. R24.675
Clairton, Pa. U54.675
Detroit R74.825
Ecorse, Mich. G55.025
Fontana, Calif. K17.175
Gary, Ind. U54.675
Houston S55.075
Ind. Harbor, Ind. I-2, Y14.675
Johnstown, Pa. B24.675
Kansas City, Mo. S55.275
Lackawanna, N.Y. B24.675
Los Angeles B35.725
Massillon, O. R24.675
Midland, Pa. C184.675
So. Chicago R2, U5, W144.675
So. Duquesne, Pa. U54.675
Struthers, O. Y14.675
Warren, O. C174.675
Youngstown U54.675

BARS & SMALL SHAPES, H.R.

High-Strength Low-Alloy
Alquippa, Pa. J55.925
Bessemer, Ala. T25.925
Bethlehem, Pa. B25.925
Clairton, Pa. U55.925
Cleveland R25.925
Ecorse, Mich. G56.675
Fairfield, Ala. T25.925
Fontana, Calif. K16.975
Gary, Ind. U55.925
Ind. Harbor, Ind. I-25.925
Indiana Harbor, Ind. Y16.425
Johnstown, Pa. B25.925
Lackawanna, N.Y. B25.925
Los Angeles B36.625
Pittsburgh J55.925
Seattle B36.675
So. Duquesne, Pa. U55.925
So. San Francisco B36.675
Struthers, O. Y16.425
Youngstown U55.925

BARS, Cold-Finished Carbon

Ambridge, Pa. W184.925
Beaver Falls, Pa. R24.925
Beaver Falls, Pa. M124.925
Buffalo B54.975
Camden, N.J. P135.375
Carnegie, Pa. C124.925
Chicago B54.925
Chicago W184.925
Cleveland A7, C204.925
Detroit P17, R75.075
Detroit B55.125
Donora, Pa. A74.925
Elyria, O. W84.925
Franklin Park, Ill. N54.925
Gary, Ind. R24.925
Green Bay, Wis. F74.925
Hammond, Ind. L2, M134.925
Hartford, Conn. R25.475
Los Angeles R26.375
Mansfield, Mass. B55.475
Massillon, O. R2, R84.925
Monark, Pa. S174.925
Newark, N.J. W185.375
Plymouth, Mich. P55.175
Pittsburgh J54.925
Putnam, Conn. W185.475
Readville, Mass. C145.475

BARS, Reinforcing (Fabricated; to consumers)

Huntington, W. Va. W75.5
Johnstown, 4-1" B25.2
Kansas City S56.0
Los Angeles B35.5
Marion, O. P115.2

St. Louis, Mo. M55.5
So. Chicago, Ill. W144.9
Spring City, Pa. K35.3
Struthers, O. Y14.9
Waukegan, Ill. A74.9
Youngstown Y14.9
Youngstown F34.9

BARS, Cold-Finished Alloy

Ambridge, Pa. W186.0
Beaver Falls, Pa. M126.0
Bethlehem, Pa. B126.0
Buffalo B56.0
Camden, N.J. P136.0
Canton, O. R26.0
Canton, O. T76.0
Carnegie, Pa. C126.0
Chicago B56.0
Chicago W186.0
Cleveland A76.0
Cleveland C206.0
Detroit P17, R76.0
Detroit B56.0
Donora, Pa. A76.0
Elyria, O. W86.0
Gary, Ind. R26.0
Hammond, Ind. L2, M136.0
Hartford, Conn. R26.0
Lackawanna, N.Y. B26.0
Mansfield, Mass. B56.0
Massillon, O. R2, R86.0
Midland, Pa. C186.0
Monaca, Pa. S176.0
Newark, N.J. W186.0
Plymouth, Mich. P56.0
So. Chicago, Ill. R2, W146.0
Spring City, Pa. K36.0
Struthers, O. Y16.0
Warren, O. C176.0
Waukegan, Ill. A76.0
Worcester, Mass. A76.0
Youngstown Y16.0
Youngstown F36.0

BARS, Reinforcing (Fabricated; to consumers)

Alabama City, Ala. R23.3
Atlanta A114.4
Los Angeles B34.4
Buffalo R23.3
Cleveland R23.3
Emeryville, Calif. J74.4
Fairfield, Ala. T23.3
Fontana, Calif. K14.4
Gary, Ind. U53.3
Houston S54.4
Ind. Harbor, Ind. I-2, Y13.3
Johnstown, Pa. B23.3
Kansas City, Mo. S54.4
Lackawanna, N.Y. B23.3
Los Angeles B34.4
Milton, Pa. B64.4
Minnequa, Colo. C104.4
Niles, Calif. P14.4
Pittsburgh, Calif. C114.4
Pittsburgh J53.3
Sand Springs, Okla. S54.4
Seattle B3, N14, S244.4
So. Chicago, Ill. R23.3
So. Duquesne, Pa. U53.3
So. San Francisco B34.4
Sparrows Point, Md. B24.4
Sterling, Ill. (1) N154.4
Struthers, O. Y13.3
Torrance, Calif. C114.4
Youngstown R2, U53.3

BARS, Reinforcing (Fabricated; to consumers)

Ambridge, Pa. W184.925
Beaver Falls, Pa. R24.925
Beaver Falls, Pa. M124.925
Buffalo B54.975
Camden, N.J. P135.375
Carnegie, Pa. C124.925
Chicago B54.925
Chicago W184.925
Cleveland A7, C204.925
Detroit P17, R75.075
Detroit B55.125
Donora, Pa. A74.925
Elyria, O. W84.925
Franklin Park, Ill. N54.925
Gary, Ind. R24.925
Green Bay, Wis. F74.925
Hammond, Ind. L2, M134.925
Hartford, Conn. R25.475
Los Angeles R26.375
Mansfield, Mass. B55.475
Massillon, O. R2, R84.925
Monark, Pa. S174.925
Newark, N.J. W185.375
Plymouth, Mich. P55.175
Pittsburgh J54.925
Putnam, Conn. W185.475
Readville, Mass. C145.475

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div.,
H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calmar Steel Corp.
C2 Calumet Steel Div.,
Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div.
Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products
Dept., Wickwire Spencer
Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof
Nail Co.
E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Fifth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div.,
Borg-Warner Corp.
F6 Fretz-Moon Tube Co.

F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Corp.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.
H1 Hianna Furnace Corp.
I-1 Igoo Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div.
Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metal
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

Battle B3 N14 .....5.80	Gary,Ind. U5 .....5.675	GraniteCity, Ill. G4 .....5.625	SHEETS, Long Terne Steel				So. San Francisco (25) B3.6.40		
and Springs S5 .....6.45	Ind. Harbor, Ind. I-2 .....5.675	Ind. Harbor, Ind. I-2 .....4.925	(Commercial Quality)				SparrowsPoint, Md. B2.5.70		
San Francisco B3 .....5.45	Ind. Harbor, Ind. Y1 .....6.175	Irvine, Pa. U5 .....4.925	BeechBottom, W. Va. W105.475				Warren, O. R2 .....5.65		
SparrowsPt. 1/4-1" B2 .....5.25	Irvine, Pa. U5 .....5.675	Middletown, O. A10 .....4.925	Gary, Ind. U5 .....5.475				Weirton, W. Va. W6 .....6.10		
Williamsport, Pa. B19 .....5.35	Lackawanna (35) B2 .....5.675	Youngstown Y1 .....4.925	Mansfield, O. E6 .....6.05				Youngstown Y1 .....6.15		
RAIL STEEL BARS									
ChicagoHts. (3,4) C2 .....4.75	Munhall, Pa. U5 .....5.675	BLACK PLATE				STRIP, Cold-Rolled			
ChicagoHts. (3,4) I-2 .....4.75	Pittsburgh J5 .....5.675	(Base Box)				High-Strength Low-Alloy			
Franklin, Pa. (3,4) F5 .....4.75	Sharon, Pa. S3 .....5.675	Alliquippa, Pa. J5 .....\$8.50				Cleveland J5 .....7.45			
PortWorth, Tex. (26) T4 .....4.55	So. Chicago, Ill. U5 .....5.675	Fairfield, Ala. T2 .....6.60				Cleveland A7 .....7.30			
untingt, W. Va. (3) W7 .....5.75	SparrowsPoint (36) B2.5.675	Gary, Ind. U5 .....6.50				Dover, O. G6 .....8.00			
Carlton, O. (3) P11 .....4.75	Warren, O. R2 .....5.675	GraniteCity, Ill. G4 .....6.70				Ecorse, Mich. G5 .....8.15			
Colne, Ill. (3) R2 .....4.05	Weirton, W. Va. W6 .....6.025	Ind. Harbor, Ind. I-2, Y1.6.50				Lackawanna, N.Y. B2 .....7.90			
Conawanda (3,4) B12 .....5.00	Youngstown U5 .....5.675	Irvine, Pa. U5 .....6.50				Sharon, Pa. S3 .....7.30			
Williamsport (3) B19 .....5.25	Youngstown Y1 .....6.175	Niles, O. R2 .....6.50				SparrowsPoint, Md. B2.7.90			
Williamsport, Pa. B19 .....5.35								Warren, O. R2 .....7.30	
ARS, Wrought Iron								Weirton, W. Va. W6 .....7.95	
(Add 4.1% to base and extras)								Youngstown Y1 .....7.80	
Economy, Pa. (S.R.) B14.9.60								STRIP, Cold-Rolled Alloy Steel	
Economy, Pa. (D.R.) B14.11.90								Bridgeport, Conn. (10) S15 12.1	
Economy (Staybolt) B14.12.20								Carnegie, Pa. S18 .....12.00	
ick Rks. (Staybolt) L5.14.50								Cleveland A7 .....11.40	
ick Rks. (S.R.) L5 .....9.60								Dover, O. G6 .....11.90	
ick Rks. (D.R.) L5 .....13.00								Fontana, Calif. K1 .....13.30	
SHEETS, Hot-Rolled Steel								Harrison, N.J. C18 .....12.00	
(18 gage and heavier)								Midland, Pa. C18 .....12.00	
AlabamaCity, Ala. R2 .....3.775	Lackawanna, N.Y. B2 .....4.575	SHEETS, Culvert				New Britn, Conn. (10) S15 12.15			
Ashland, Ky. (8) A10 .....3.775	Middletown, O. A10 .....4.575	No. 16 Alloy Fe				Pawtucket, R.I. (11) N8 12.15			
Butler, Pa. A10 .....3.775	Pittsburgh, Calif. C11 .....5.525	Ashland, Ky. A10 5.875				Pawtucket, R.I. (12) N8.12.45			
Cleveland J5, R2 .....3.775	Pittsburgh J5 .....4.575	Canton, O. R2 .....5.925				Sharon, Pa. S3 .....12.00			
Conshohocken, Pa. A3 .....4.175	SparrowsPoint, Md. B2.4.575	Fairfield, Ala. T2 5.875 6.125				Worcester, Mass. A7 .....11.70			
Detroit M1 .....4.40	Steubenville, O. W10 .....4.575	Gary, Ind. U5 .....5.875				Youngstown C8 .....12.00			
Ecorse, Mich. G5 .....3.975	Warren, O. R2 .....4.575	Gary, Ind. U5 .....5.875							
Fairfield, Ala. T2 .....3.775	Weirton, W. Va. W6 .....4.575	Ind. Harbor I-2 .....5.875							
Fontana, Calif. K1 .....4.825	West Leechburg, Pa. A4.5.45	Irvine, Pa. U5 .....5.875							
Gary, Ind. U5 .....3.775	Youngstown Y1 .....4.575	Kokomo, Ind. C16 6.525							
Geneva, Utah C11 .....3.875	SHEETS, Galv'd No. 10 Steel								
GraniteCity, Ill. G4 .....4.30	AlabamaCity, Ala. R2 .....5.075	Ashland, Ky. (8) A10 .....5.075				STRIP, Hot-Rolled Ingot Iron			
Ind. Harbor, Ind. I-2, Y1.3.775	Canton, O. R2 .....5.075	Canton, O. R2 .....5.075				Ashland, Ky. (8) A10 .....3.975			
Irvine, Pa. U5 .....3.775	Delphos, O. N16 .....5.675	Dover, O. R1 .....5.775				Warren, O. R2 .....4.325			
Lackawanna, N.Y. B2 .....3.775	Dover, O. R1 .....5.775	Fairfield, Ala. T2 .....5.075				STRIP, Cold-Rolled Ingot Iron			
Munhall, Pa. U5 .....3.775	Fairfield, Ala. T2 .....5.075	Gary, Ind. U5 .....5.075				Warren, O. R2 .....5.70			
Niles, O. N12 .....5.425	GraniteCity, Ill. G4 .....5.275	Ind. Harbor, Ind. I-2 .....5.075							
Pittsburgh, Calif. C11 .....4.475	Ind. Harbor, Ind. I-2 .....5.075	Irvine, Pa. U5 .....5.075							
Pittsburgh J5 .....3.775	Kokomo, Ind. (13) C16 .....5.475	Kokomo, Ind. (13) C16 .....5.475							
Sharon, Pa. S3 .....4.175	Martins Ferry, O. W10 .....5.075	Martins Ferry, O. W10 .....5.075							
So. Chicago, Ill. W14 .....3.775	Martins Ferry, O. W10 .....5.075	SHEETS, Hot-Rolled Ingot Iron							
SparrowsPoint, Md. B2.3.775	Niles, O. N12 .....6.275	18 Gage and Heavier							
Steubenville, O. W10 .....3.775	Pittsburgh, Calif. C11 .....5.825	Ashland, Ky. (8) A10 .....4.025							
Torrance, Calif. C11 .....4.475	SparrowsPoint, Md. B2.5.075	Cleveland R2 .....4.375							
Warren, O. R2 .....3.775	Steubenville, O. W10 .....5.075	Ind. Harbor, Ind. I-2 .....4.025							
Weirton, W. Va. W6 .....3.775	Torrance, Calif. C11 .....5.825	Warren, O. R2 .....4.375							
West Leechburg, Pa. A4.3.925	Weirton, W. Va. W6 .....5.075	SHEETS, Cold-Rolled Ingot Iron							
Youngstown U5, Y1 .....3.775	SHEETS, Galvanized No. 10, High-Strength Low-Alloy								
SHEETS, H.R. (19 gage)									
AlabamaCity, Ala. R2 .....4.925	Irvine, Pa. U5 .....7.625	SHEETS, Galvanized Ingot Iron							
Dover, O. R1 .....5.825	SparrowsPoint (39) B2.7.775	No. 10 flat							
Mansfield, O. E6 .....5.65	SHEETS, Galvanized Steel								
Niles, O. N12 .....5.675	Canton, O. R2 .....5.825	Ashland, Ky. (8) A10 .....5.325							
Torrance, Calif. C11 .....5.775	Irvine, Pa. U5 .....5.825	Canton, O. R2 .....5.825							
SHEETS, Cold-Rolled									
High-Strength Low-Alloy	Kokomo, Ind. (13) C16 .....6.025	SHEETS, ZINGCRIP Ingot Iron							
Cleveland J5, R2 .....6.925	Niles, O. N12 .....6.825	Butler, Pa. A10 .....5.575							
Ecorse, Mich. G5 .....7.475	SHEETS, ZINGCRIP STEEL No. 10								
Fontana, Calif. K1 .....7.975	Canton, O. R2 .....5.825	Butler, Pa. A10 .....5.325							
Gary, Ind. U5 .....6.925	Kokomo, Ind. (13) C16 .....6.025	Middletown, O. A10 .....5.325							
IndianaHarbor, Ind. Y1.7.425	Niles, O. N12 .....6.825	SHEETS, Electro Galvanized							
IndianaHarbor, Ind. I-2.6.925	Cleveland R2 (28) .....5.925	Cleveland R2 (28) .....5.925							
Irvine, Pa. U5 .....6.925	Weirton, W. Va. W6 .....5.775	Niles, O. R2 (28) .....5.925							
Lackawanna (37) B2 .....6.925	SHEETS, Well Casing								
Pittsburgh J5 .....6.925	Fontana, Calif. K1 .....5.34	Fontana, Calif. K1 .....5.34							
SparrowsPoint (38) B2.6.925	Yorkville, O. W10 .....7.00	BLUED STOCK, 29 ga							
Warren, O. R2 .....6.925	Follansbee, W. Va. F4 .....7.10	Yorkville, O. W10 .....7.00							
Weirton, W. Va. W6 .....7.275	Follansbee (23) F4 .....6.425	Follansbee (23) F4 .....6.425							
Youngstown Y1 .....7.425	SHEETS, Enameling Iron								
SHEETS, H.R. (14 ga. heavier)									
High-Strength Low-Alloy	Ashland, Ky. (8) A10 .....4.925	Ashland, Ky. (8) A10 .....4.925							
Cleveland J5, R2 .....5.675	Cleveland R2 .....4.925	Cleveland R2 .....4.925							
Ecorse, Mich. G5 .....6.225	Gary, Ind. U5 .....4.925	Gary, Ind. U5 .....4.925							
Fairfield, Ala. T2 .....5.675	SHEETS, Enameling Iron								
Fontana, Calif. K1 .....6.775	Ashland, Ky. (8) A10 .....4.925								
M1 McLouth Steel Corp.									
M4 Mahoning Valley Steel	P13 Precision Drawn Steel								
M5 Medart Co.	P14 Pitts. Screw & Bolt Co.								
M6 Mercer Tube & Mfg. Co.	P15 Pittsburgh Metallurgical								
M8 Mid-States Steel & Wire	P16 Page Steel & Wire Div., Amer. Chain & Cable								
M12 Moltrup Steel Products	P17 Plymouth Steel Co.								
M13 Monarch Steel Co.	R1 Reeves Steel & Mfg. Co.								
N2 National Supply Co.	R2 Republic Steel Corp.								
N3 National Tube Div.	R3 Rhode Island Steel Corp.								
N5 Nelson Steel & Wire Co.	R5 Roebing's Sons, John A.								
N6 NewEng.-HighCarb.Wire	R6 Rome Strip Steel Co.								
N8 Newman-Crosby Steel	R7 Rotary Electric Steel Co.								
N9 Newport Steel Corp.	R8 Reliance Div., Eaton Mfg.								
N12 Niles Rolling Mill Div.	S1 Seneca Wire & Mfg. Co.								
N14 Northw. Steel Roll. Mills	S3 Sharon Steel Corp.								
N15 Northwestern S.&W. Co.	S4 Sharon Tube Co.								
N16 New Delphos Mfg. Co.	S5 Sheffield Steel Corp.								
O3 Oliver Iron & Steel Corp.	S6 Shenango Furnace Co.								
O4 Oregon Steel Mills	S7 Simmons Co.								
P1 Pacific States Steel Corp.	S8 Simonds Saw & Steel Co.								
P2 Pacific Tube Co.	S9 Sloss-Sheffield S.&I. Div.								
P4 Phoenix Iron & Steel Co.	S12 Standard Forgings Corp.								
P5 Pilgrim Drawn Steel	S14 Standard Tube Co.								
P6 Pittsburgh Coke & Chem.	S15 Stanley Works								
P7 Pittsburgh Steel Co.	S16 Struthers Iron & Steel								
P9 Pittsburgh Tube Co.	S17 Superior Drawn Steel Co.								
P11 Pollak Steel Co.	S18 Superior Steel Corp.								
P12 Portsmouth Division, Detroit Steel Corp.	S19 Sweet's Steel Co.								
	S20 Southern States Steel								
	S24 Seidelhuber Steel								
	T2 Tenn. Coal & Iron Div.								
	T3 Tenn. Prod. & Chem.								
	T4 Texas Steel Co.								
	T5 Thomas Strip Division, Pittsburgh Steel Co.								
	T6 Thompson Wire Co.								
	T7 Timken Roller Bearing								
	T9 Torawanda Iron Div., Am. Rad. & Stan. San.								
	U4 Universal Cyclops Steel								
	U5 United States Steel Corp.								
	V2 Vanadium-Alloys Steel								
	V3 Vulcan Crucible Steel Co.								
	W1 Wallace Barnes Co.								
	W2 Wallingford Steel Co.								
	W3 Washburn Wire Co.								
	W4 Washington Steel Corp.								
	W6 Weirton Steel Co.								
	W7 W. Va. Steel & Mfg. Co.								
	W8 West. Auto. Mach. Screw								
	W9 Wheeland Tube Co.								
	W10 Wheeling Steel Corp.								
	W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron								
	W13 Wilson Steel & Wire Co.								
	W14 Wisconsin Steel Div. International Harvester								
	W15 Woodward Iron Co.								
	W18 Wyckoff Steel Co.								
	Y1 Youngstown Sheet&Tube								

STRIP, Hot-Rolled Carbon	
Ala. City, Ala. (27) R2	3.725
Alton, Ill. L1	4.20
Ashland, Ky. (8) A10	3.725
Atlanta A11	4.275
Bessemer, Ala. T2	3.725
Bridgeport, Conn. (10) S15	4.225
Butler, Pa. R2	3.725
Butler, Pa. A10	3.725
Carnegie, Pa. S18	4.225
Conshohocken, Pa. A3	4.125
Detroit M1	4.40
Ecorse, Mich. G5	4.025
Fairfield, Ala. T2	3.725
Fontana, Calif. K1	5.175
Gary, Ind. U5	3.725
Houston, Tex. S5	4.125
Ind. Harbor, Ind. I-2	Y1 3.725
Johnstown, Pa. (25) B2	3.725
Kansas City, Mo. (3) S5	4.325
Lackawanna, N.Y. (32) B2	3.725
Los Angeles (25) B3	4.475
Milwaukee, Wis. B6	4.35
Minneapolis, Minn. C10	4.775
New Britain, Conn. (10) S15	4.225
N. Tonawanda, N.Y. B11	3.725
Pittsburgh, Pa. C11	4.475
Riverdale, Ill. A1	3.725
San Francisco S7	5.00
Seattle (25) B3	4.725
Seattle N14	4.725
Sharon, Pa. S3	4.225
So. Chicago, Ill. W14	3.725
So. San Francisco (25) B3	4.475
Sparrows Point, Md. B2	3.725
Sterling, Ill. N15	4.725
Torrance, Calif. C11	4.475
Warren, O. R2	3.725
Wheaton, W. Va. W6	3.525
West Leechburg, Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy	
Bridgeport, Conn. (10) S15	6.05
Carnegie, Pa. S18	6.45
Fontana, Calif. K1	7.50
Gary, Ind. U5	6.10
Houston, Tex. S5	6.50
Kansas City, Mo. S5	6.70
Midland, Pa. C18	5.85
New Britain, Conn. (10) S15	6.05
Sharon, Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon	
Anderson, Ind. (40) G6	5.50
Bridgeport, Conn. (10) S15	5.50
Butler, Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn, Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover, O. (40) G6	5.50
Ecorse, Mich. G5	5.30
Follansbee, W. Va. F4	5.10
Fontana, Calif. K1	7.00
Franklin Park, Ill. (40) T6	5.35
Ind. Harbor, Ind. I-2	5.35
Lackawanna, N.Y. B2	5.10
Los Angeles C1	7.15
Mattapan, Mass. T6	5.95
Middletown, O. A10	5.10
New Castle, Pa. B4	5.80
New Castle, Pa. (40) E5	5.70
New Haven, Conn. D2	5.85
New Haven, Conn. A7	5.60
Pawtucket, R.I. R3	6.45
Pawtucket, R.I. (21) N8	6.30
Riverdale, Ill. (40) A1	5.35
Rome, N.Y. R6	5.10
Sharon, Pa. S3	5.80
Sparrows Point, Md. B2	5.10
Trenton, N.J. R5	6.45
Wallingford, Conn. W2	6.30
Warren, O. (40) T5	5.70
Warren, O. R2	5.10
Wheaton, W. Va. W6	5.10
Youngstown C8	5.70
Youngstown Y1	5.10

STRIP, Electro Galvanized	
Dover, O. G6	5.50
Warren, O. T5	5.70
Wheaton, W. Va. W6	5.10
Youngstown C8	5.70

TIGHT COOPERAGE HOOP	
Atlanta A11	4.45
Riverdale, Ill. A1	4.30
Sharon, Pa. S3	4.55
Youngstown U5	4.15

ROPE WIRE	
Alton, Ill. L1 (43)	8.75
Bartonville, Ill. K4	8.95
Buffalo W12 (43)	8.55
Postoria, O. S1 (43)	8.85
Johnstown, Pa. B2 (43)	8.55
Monessen, Pa. P16 (43)	8.55
Monessen, Pa. P7 (43)	8.80
Muncie, Ind. I-7 (43)	8.75
Palmer, Mass. W12 (43)	8.85
Portsmouth, O. P12 (43)	8.85
Roebeling, N.J. R5 (43)	8.85
Sparrows Pt. B2 (43)	8.65
Struthers, O. Y1 (43)	8.55
Worcester J4, T6 (43)	8.85

(A) Plow and Mild Plow; add .025c for improved plow.

WIRE, Merchant Quality	
(6 to 8 gage) An'd. Galv.	
Alabama City R2	6.075 6.325
Albuquerque J5	6.075 6.525
Atlanta A11	6.325 6.675
Bartonville (19) K4	6.075 6.40
Buffalo W12	5.225
Cleveland A7	6.075 6.225
Crawfordsville M8	6.175 6.475
Donora, Pa. A7	6.075 6.225
Duluth, Minn. A7	6.075 6.225
Fairfield T2	6.075 6.225
Houston Tex S5	6.475 6.80
Johnstown B2	6.075 6.45
Joliet, Ill. A7	6.075 6.225
Kansas City, Mo. S5	6.675 7.00
Kokomo C16	6.175 6.425
Los Angeles B3	7.025
Minneapolis C10	6.325 6.70
Monessen P7	6.075 6.45
Palmer W12	5.525
Pitts. Calif. C11	7.025 7.175
Pitts. (18) P12	6.475
Rankin A7	6.075 6.225
So. Chicago R2	6.075 6.325
So. S. Fran. C10	7.025 7.40
Sparrows Pt. B2	6.175 6.55
Sterling (1) (48) N15	6.375 6.925
Struthers, O. Y1	6.075 6.475
Torrance, Cal. C11	7.025
Worcester A7	6.375 6.525

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

WIRE (16 gage) Stone Stone	
(Add 4.7c on base and extras)	
Albuquerque J5	10.15 12.15
Bartonville (19) K4	10.25 12.00
Cleveland A7	10.25 11.55
Crawfordsville M8	10.73 12.51
Postoria, O. S1	10.40 13.00
Johnstown B2	10.73 12.58
Kokomo C16	10.825 12.325
Minneapolis C10	10.40 12.425
Palmer, Mass. W12	10.25 12.15
Pitts. Cal. C11	10.60 11.90
Sparrows Pt. B2	10.84 12.68
Sterling (1) N15	10.73 12.15
Waukegan A7	10.25 11.55
Worcester A7	11.85

*Based on 14c zinc; †14.50c zinc; ‡Includes 4.7c increase.

WIRE, Manufacturers Bright, Low Carbon	
Alabama City, Ala. R2	5.225
Albuquerque, Pa. J5 (42)	4.85
Atlanta A11	5.475
Alton, Ill. L1	5.45
Bartonville, Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville, Ind. M8	5.325
Donora, Pa. A7	5.225
Duluth, Minn. A7	5.225
Fairfield, Ala. T2	5.225
Postoria, O. (24) S1	5.725
Houston S5	6.825
Johnstown, Pa. B2	5.225
Joliet, Ill. A7	5.225
Kansas City, Mo. S5	5.825
Kokomo, Ind. C16	5.325
Los Angeles B3	6.175
Minneapolis, Colo. C10	5.475
Monessen, Pa. P7	5.475
Newark 6-8 ga I-1	5.88
N. Tonawanda B11	5.225
Palmer, Mass. W12	5.525
Pittsburgh, Calif. C11	6.175
Portsmouth, O. P12	5.625
Rankin, Pa. A7	5.225
So. Chicago, Ill. R2	5.225
So. San Francisco C10	6.175
Sparrows Point, Md. B2	5.325
Sterling, Ill. (1) N15	5.225
Struthers, O. Y1	5.225
Torrance, Calif. C11	6.175
Waukegan, Ill. A7	5.225
Worcester, Mass. A7	5.525

WIRE, Cold-Rolled Flat	
Anderson, Ind. G6	6.20
Buffalo W12 (43)	6.35
Cleveland A7	6.95
Crawfordsville, Ind. M8 (43)	5.70
Dover, O. G6	6.20
Postoria, O. S1 (43)	6.00
Kokomo, Ind. C16 (43)	5.70
Franklin Park, Ill. T6 (43)	6.20
Massillon, O. R3 (43)	5.85
Monessen, Pa. P16 (43)	6.35
Monessen, Pa. P7 (43)	6.10
Pawtucket, R.I. (12) N8 (43)	6.85
Trenton, N.J. R5 (43)	6.15
Worcester, Mass. A7	7.25
Worcester, Mass. T6 (43)	6.50
Worcester, Mass. W12 (43)	6.85

WIRE, Galv'd ACSF for Cores	
Bartonville, Ill. K4	8.90
Monessen, Pa. P16 (43)	8.50
Muncie, Ind. I-7 (43)	8.70
Roebeling, N.J. R5 (43)	8.80
Sparrows Pt., Md. B2 (43)	8.60
Johnstown, Pa. B2 (43)	8.50

WIRE, MB Spring, High Carbon

Alton, Ill. L1 (43)	6.55
Bartonville, Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7	6.55
Donora, Pa. A7	6.55
Duluth, Minn. A7	6.55
Postoria, O. S1 (43)	6.25
Johnstown, Pa. B2 (43)	6.25
Millbury (12) N6 (43)	8.05
Minneapolis, Colo. C10 (43)	6.50
Monessen, Pa. P7 (43)	6.25
Monessen, Pa. P16	6.75
Muncie, Ind. I-7 (43)	6.45
Palmer, Mass. W12 (43)	6.55
Pittsburgh, Calif. C11	7.50
Roebeling, N.J. R5 (43)	6.55
Portsmouth, O. P12 (43)	6.25
So. Chicago, Ill. R2 (43)	6.25
So. San Fran. C10 (43)	7.20
Sparrows Pt., Md. B2 (43)	6.35
Struthers, O. Y1 (43)	6.25
Trenton, N.J. A7	6.85
Waukegan, Ill. A7	6.55
Worcester A7	6.85
Worcester, T6, W12 (43)	6.55
Worcester, Mass. J4 (43)	6.75

Wire Upholstery Spring	
Albuquerque, Pa. J5	6.275
Alton, Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora, Pa. A7	6.275
Duluth, Minn. A7	6.275
Johnstown, Pa. B2	6.275
Los Angeles B3	7.225
Minneapolis, Colo. C10	6.525
Monessen, Pa. P7	6.275
Monessen, Pa. P16 (42)	6.40
New Haven, Conn. A7	6.575
Palmer, Mass. W12	6.575
Pittsburgh, Calif. C11	7.225
Portsmouth, O. P12	6.275
Roebeling, N.J. R5	6.575
So. Chicago, Ill. R2	6.275
So. San Francisco C10	7.225
Sparrows Point, Md. B2	6.375
Torrance, Calif. C11	7.225
Trenton, N.J. A7	6.575
Waukegan, Ill. A7	6.275
Worcester, Mass. A7	6.575

WIRE, Fine & Weaving (8" Coils)	
Alton, Ill. L1 (43)	9.20
Bartonville, Ill. K4	9.42
Buffalo W12 (43)	8.90
Chicago W13	9.32
Cleveland A7	10.05
Crawfordsville, Ind. M8 (43)	8.90
Postoria, O. S1 (43)	8.90
Johnstown, Pa. B2 (43)	8.90
Kokomo, Ind. C16 (43)	8.90
Monessen, Pa. P16 (43)	8.90
Muncie, Ind. I-7 (43)	9.10
Palmer, Mass. W12 (43)	9.20
Roebeling, N.J. R5 (43)	9.20
Waukegan, Ill. A7	10.05
Worcester, Mass. A7	10.35
Worcester, Mass. T6 (43)	9.20

WIRE T & Bead	
Bartonville, Ill. K4	11.51
Monessen, Pa. P16 (43)	11.40
Roebeling, N.J. R5 (43)	11.55
WOVEN FENCE, 9-15 1/2 Ga. Col.	
Alabama City, Ala. R2	135
Ala. City, Ala. 17-18 ga. R2	222
Albuquerque, Pa. 9-14 1/2 ga. J5	139
Atlanta A11	140
Bartonville, Ill. (19) K4	137
Crawfordsville, Ind. M8	138
Donora, Pa. A7	133
Duluth, Minn. A7	133
Fairfield, Ala. T2	133
Houston, Tex. S5	145
Johnstown, Pa. B2	138
Johnstown 17ga. 6" B2	229
Joliet, Ill. A7	133
Kansas City, Mo. S5	149
Kokomo, Ind. C16	140
Minneapolis, Colo. C10	148
Monessen, Pa. P7	138
Pittsburgh, Calif. C11	156
Rankin, Pa. A7	133
So. Chicago, Ill. R2	133
So. San Francisco C10	133
Sterling, Ill. (1) (47) N15	138

*On 14c zinc; †17.5c zinc.

FENCE POSTS	
Chicago Hts., Ill. C2	140
Duluth, Minn. A7 (49)	136
Franklin, Pa. F5	140
Huntington, W. Va. W7	145
Johnstown, Pa. B2	148
Marion, O. P11	140
Minneapolis, Colo. C10	138
Moline, Ill. R2	136
So. Chicago, Ill. R2	140
Tonawanda, N.Y. B12	148
Williamsport, Pa. S19	158

Wire, Barbed Col.	
Alabama City, Ala. R2	144
Albuquerque, Pa. J5	148
Atlanta A11	149
Bartonville, Ill. (19) K4	146
Crawfordsville, Ind. M8	147
Donora, Pa. A7	148
Duluth, Minn. A7	148
Fairfield, Ala. T2	148
Houston, Tex. S5	154
Johnstown, Pa. B2	145

Joliet, Ill. A7	148
Kansas City, Mo. S5	158
Kokomo, Ind. C16	149
Minneapolis, Colo. C10	153
Monessen, Pa. P7	147
Pittsburgh, Calif. C11	168
Rankin, Pa. A7	148
So. Chicago, Ill. R2	144
So. San Fran., Calif. C10	167
Sparrows Point, Md. B2	147

*On 14c zinc; †17.5c zinc.

BALE TIES, Single Loop Col.	
Alabama City, Ala. R2	132
Atlanta A11	135
Bartonville, Ill. (19) K4	132
Crawfordsville, Ind. M8	132
Donora, Pa. A7	132
Duluth, Minn. A7	132
Fairfield, Ala. T2	132
Joliet, Ill. A7	132
Kansas City, Mo. S5	144
Kokomo, Ind. C16	134
Minneapolis, Colo. C10	137
Pittsburgh, Calif. C11	156
So. Chicago, Ill. R2	132
So. San Fran., Calif. C10	156
Sparrows Point, Md. B2	134
Sterling, Ill. (1) N15	132

NAILS, Stock	
To dealers & mfrs. (7) Col.	
Alabama City, Ala. R2	127
Albuquerque, Pa. J5	127
Atlanta A11	130
Bartonville, Ill. (19) K4	127
Chicago, Ill. W13	127
Cleveland A9 (44)	125
Crawfordsville, Ind. M8	127
Donora, Pa. A7	127
Duluth, Minn. A7	127
Fairfield, Ala. T2	127
Galveston, Tex. D7	135
Houston, Tex. S5	135
Johnstown, Pa. B2	127
Joliet, Ill. A7	127
Kansas City, Mo. S5	139
Kokomo, Ind. C16	129
Minneapolis, Colo. C10 (44)	123
Monessen, Pa. P7	127
Pittsburgh, Calif. C11	146
Portsmouth, O. P12	13

BUTTWELD STANDARD PIPE, T & C Carload discounts from list, %

Size-Inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
List Per Ft.	8.5c	11.5c	17c	23c	27.5c	37c	58.5c	76.5c
Pounds Per Ft.	0.85	1.13	1.68	2.28	2.73	3.68	5.82	7.62
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Alliquippa, Pa. J5 (††)	28.75	12.50	31.75	16.50	34.25	20	36.75	21
Alton, Ill. L1 (†)	29.5	10.5	32.5	14.5	35	18	35.5	18.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5
Btana, Pa. N2 (†)	28.75	9.50	31.75	13.50	34.25	17	36.75	18.75
Montana, Calif. K1 (†)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5
Ind. Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21
Lorain, O. N3 (*)	28.75	18.50	31.75	22.50	34.25	26	36.75	25.50
Sharon, Pa. M6	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5
Youngstown R2 (**)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75
Youngstown Y1 (†)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19

SEAMLESS STANDARD PIPE, T & C Carload discounts from list, %

Size-Inches	2	2 1/2	3	3 1/2	4	5	6	
List Per Ft	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Alliquippa, Pa. J5 (††)	18.25	2.5	22.25	5	24.75	7.50	26.25	9
Ambridge, Pa. N2 (†)	18.25		22.25		24.75		26.25	
Lorain, O. N3 (*)	18.25	7	22.25	8	24.75	10.50	26.25	12
Youngstown Y1 (†)	24	7.50	27	9.25	27	9.25	29	11.25
Youngstown R2 (**) 24	8.25	27	9.75	27	9.75	29	11.75	29
Youngstown Y1 (†)	24	8.25	27	9.75	27	9.75	29	11.75
Wheatland, Pa. W9	24	8.25	27	9.75	27	9.75	29	11.75

For Wayne, Ind., bars and wire, except 501 & 502 J6 quotes slight variations on Types 301-347.
Gary, Ind., sheets except Type 416 U5.
Harrison, N. J., strip and wire C18.
Harrison, N. J., wire, Type 302, 33.00c; Type 304, 33.75

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (**)	24	8.25	27	9.75	27	9.75	29	11.75	29	11.75	33.75	16.5	33.75	16.5
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BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size-Inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
List Per Ft.	5.5c	6c	6.5c	7c	7.5c	8c	8.5c	9c
Pounds Per Ft.	0.24	0.42	0.67	0.92	1.17	1.42	1.67	1.92
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	32.25	+3.5	34.75	+7.75	37	14.25
Butler, Pa. F6 (†)	28	+1.25	22	+4.75	16	+9.5		
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.50	30.25	11.50
Sharon, Pa. M6 (†)	29.5	-1.75	23	+2.25	18	+5.25		
Sharon, Pa. S4 (†)	30.5	1.25	25	+1.75	20	+5.5		
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50		
Youngstown R2 (**)							33	15.75
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50		

Galvanized pipe discounts based on zinc price of: (†), 14c; (†), 12.50c; (**), 11.50c; (*), 5c; (††), 11c; with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D.	B.W.	Seamless	Elec. Weld
In.	Gage	H.R.	C.D.
1	13	14.80	18.05-18.96
1 1/2	13	17.53	21.38 22.45
1 1/2	13	19.37-20.34	23.63-24.51
1 1/2	13	22.89-24.72	27.92-30.16
2	13	25.65-27.71	31.29-33.51
2 1/2	13	28.89-31.20	35.24-38.06
2 1/2	12	31.36-33.87	38.25-41.32
2 1/2	12	34.54-37.31	42.14-45.52
2 1/2	12	37.40-40.39	45.62 49.25
3	12	39.89-43.08	48.65-52.56

BOLTS, NUTS**CARRIAGE, MACHINE BOLTS**

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

1/2-in. & smaller diam.

3/4-in. & 1-in.

1 1/2-in. & larger

Longer than 6 in.:

All diams.

Leg bolts, all diams.:

6 in. and shorter

over 6 in. long

Ribbed Necked Carriage

Blank

Plow

Step, Elevator, Tap and

Sleigh Shoe

Tire Bolts

Boiler & Fitting-Up Bolts

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and

shorter

1 in. & smaller diam.

x over 6 in.

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller

3/4-in. diam & larger

N.F. thread, all diams.

STEEL STOVE BOLTS

(F.o.b. plant, per cent off

list in packages)

Plain finish

Plated finishes

HEXAGON CAP SCREWS

(1020 steel; packaged; per

cent off list)

6 in. or shorter:

3/4-in. & smaller

1/2-in. through 1 in.

Longer than 6 in.:

3/4-in. & smaller

1/2-in. through 1 in.

RIVETS

F.o.b. Cleveland, and/or

freight equalized with Pitts-

burgh; f.o.b. Chicago, and/or

freight equalized with Bir-

mingham except where equal-

ization is too great.

Structural 3/4-in., larger 8.50c

3/8-in. under

ELECTRODES

(Threaded, with nipples, un-

boxed f.o.b. plant)

GRAPHITE

Inches

Diam.

Length

8 to 16

Light

7/8-in. & smaller

CARBON

35.40 110 8.03

30 65.84-110 8.03

24 72 to 104 8.03

17 to 20 34.90 8.03

METAL POWDERS

(Per pound, f.o.b. shipping

point in ton lots for minus

100 mesh, except as other-

wise noted)

Sponge iron: Cents

98+ % Fe, annealed 18.00

Unannealed 14.50

Swedish, c.i.f. N.Y.,

c.i., in bags 10.90

Electrolytic iron:

Annealed, 99.5% Fe. 42.50

Unannealed (99+ %

Fe) 36.50

Unannealed (99+ %

Fe) (minus 325

mesh) 53.50

Powder Flakes 48.50

Carbonyl Iron:

97.9-99.8% size 5 to

10 microns. 83.00-143.00

Aluminum:

Carlots, freight

allowed 31.00

Atomized, 500 lb

drums, freight

allowed 34.00

Antimony, 500 lb lots. 78.00

Brass, 20-ton lots. 30.00-39.00

Bronze, 10-ton

lots 52.25-60.00

Copper:

Electrolytic 45.75

Reduced 12.75*

Lead 7.50*

Magnesium 75.00-85.00

Manganese:

Minus 100 mesh 57.00

Minus 35 mesh 52.00

Minus 200 mesh 62.00

Nickel unannealed 89.50

Nickel-Silver 5-ton lots 48.50

Silicon 38.50

Solder 8.50*

Stainless Steel, 302 87.00

Zinc, 10-ton lots. 17.50-25.00

Tungsten

Melting grade, 99%

60 to 200 mesh:

1000 lb and over 5.35

Less than 1000 lb 5.50

Chromium, electrolytic

99.9% Cr min. 3.50

* plus cost of metal.

STAINLESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

Balt., Types 301-347 and 430

sheets, except 303 and 309

E2.

Brackenridge, Pa. sheets A4

quotes slight variations on

Types 301-347.

Bridgeville, Pa., bars, wire,

sheets & strip U4.

Butler, Pa. sheets and strip

except Types 303, 309, 416

420, 501 & 502 A10

Carnegie, Pa., sheets and

strip except Types 303,

416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes

34.00c on Type 301; 36.50c

302; 38.50c, 304; 58.50c,

316; 52.00c, 347; 30.50c,

410; 31.00c, 430.

Dunkirk, N. Y., bars, wire

A4 quotes slight variations

on Types 301-347.

Duquesne, Pa., bars U5.

Clad Steels

(Cents per pound; add 4.7% to base price and extras)

Cladding

Stainless

Carbon Base

10% 20%

302

304

309

310

316

317

318

321

347

405

410

Nickel

Monel

Copper*

Carbon Base

10% 20%

19.75

24.50

26.00

23.00

24.00

23.00

24.00

23.00

24.00

23.00

24.00

23.00

24.00

23.00

24.00

23.00

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS		H.R. Alloy 4140††‡	Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡			Carbon	Floor
Baltimore	6.00	7.35	7.36	6.42	...	6.56	7.64	11.27	6.59	6.55	7.78
Boston	6.51	7.46	8.93	6.55	...	6.57	7.82	12.37	6.56	6.80	7.98
Buffalo	5.80	6.65	8.31	6.21	...	6.05	7.45	11.07	6.08	6.30	7.67
Birmingham ...	5.80	6.65	7.70‡	5.80	...	5.80	8.62	...	5.95	6.10	8.15
Chicago	5.95	6.82	7.90	6.10	...	5.98	7.16	11.45	6.07	6.08	7.18
Cincinnati	6.28	6.89	8.26	6.40	...	6.28	7.38	11.87	6.54	6.55	7.90
Cleveland	5.95	6.82	7.55	6.27	...	6.04	7.10	11.59	6.40	6.25	7.51
Detroit	6.00	6.85	8.59	6.13	6.85	6.14	7.40	10.92	6.42	6.47	7.52
Houston	6.74	...	8.62	6.89	...	6.98	...	...	6.82	6.78	8.16
Jersey City, N.J..	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Los Angeles ...	7.05	8.70	8.45	6.75	11.20	6.95	9.50	12.05	6.60	6.70	8.90
Milwaukee	6.12	6.99	8.07	6.27	...	6.15	7.43	11.62	6.24	6.25	7.35
Moline, Ill.	6.16	7.00	8.25	6.19	...	6.18	8.00	...	6.30	6.30	...
New York	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Newark, N. J..	6.62	7.41	8.53	6.56	...	6.59	8.06	...	6.39	6.60	7.18
Norfolk, Va. ..	6.75	...	...	7.30	...	7.00	8.50	...	6.85	6.95	7.65
Philadelphia ...	6.11	7.25	7.70	6.45	8.30	6.54	7.66	10.79	6.17	6.24	7.37
Pittsburgh	6.30	7.30	7.92	5.94	...	5.83	7.01	11.34	6.30	6.30	7.18
Portland, Oreg..	7.80	9.05	9.30	7.50	...	7.25	9.75	...	7.25	7.05	9.25
Richmond, Va. .	6.14	6.95	8.68	6.53	...	6.30	7.73	...	6.58	6.68	7.80
St. Louis	6.10	6.94	8.05	6.14	...	6.28	7.53	10.95	6.35	6.35	7.58
St. Paul	6.47	7.31	8.56	6.50	...	6.49	7.92	...	6.61	6.61	7.84
San Francisco..	6.90	8.20	9.50	6.75	...	6.85	8.70	12.05	6.50	6.75	8.90
Seattle-Tacoma..	7.16	8.24	9.20	7.70	...	7.27	9.74	11.70	6.63	7.04	8.90
Spokane (city)..	7.80	9.40	9.80	7.15	...	7.10	9.80	11.90	7.00	7.10	9.15
Washington ...	6.31	7.61	8.90	6.89	...	6.90	8.13	...	6.93	6.95	8.17

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; ‡—500 to 1499 lb; §—1000 to 1999 lb.

Warehouses Improve Inventory Positions

Supply in most districts is freer except in such popular items as hot and cold-rolled sheets, large size bars, plates and certain specialties. Price trend continues upward

Cleveland—Warehouse price schedules have been adjusted upward by district distributors to reflect recent advances at the mill level resulting from upward revisions in extra cards on the various products.

In the new warehouse schedules hot-rolled 18-gage sheets are up \$3 per ton, cold-rolled sheets, \$3.40, hot-rolled strip, \$5.40, hot-rolled bars, \$3, cold-finished carbon bars (including quality extra) \$3.80, structural shapes, \$2.40, carbon plates, \$2.60. Cold-rolled strip is unchanged but will be revised upward when the mills issue new extra cards on this product. The same is true of floor plates.

Impact of the higher prices is not noticeable in demand. Customers still find it necessary to do considerable shopping in filling their needs. While over-all warehouse stocks are markedly improved, they are still unbalanced, especially in the more popular items.

Boston—Distributors are well stocked on floor plates, including lighter gages. Stocks of cold-finished bars are in balance with some larger sizes included. Hot-rolled bar inven-

tories also are improving. Galvanized sheet inventories are ample with some price shading noted at the secondary level. Warehouses are getting more production specification tonnage on some products and are not taking everything offered in the way of excess primes, off-heats and odd sizes.

Philadelphia—Some distributors declare that sales in May probably reached a new high for the year on a dollar basis, reflecting higher prices which were in effect through most of the latter half of the month on most major products—prices which were increased as a result of the general upward readjustments in mill extras.

On a tonnage basis, the showing was not quite so good, although turn-over continued active. June business is expected to be brisk.

New York—Steel warehouses are getting into inventory balance on a limited number of products, small cold-finished rounds, galvanized sheets, tool steel and more light specialties. May volume compared favorably with April, but was slightly below in some cases. Still short of demand are heavier carbon products, notably structurals and heavy flats. Alloy volume is not quite as heavy

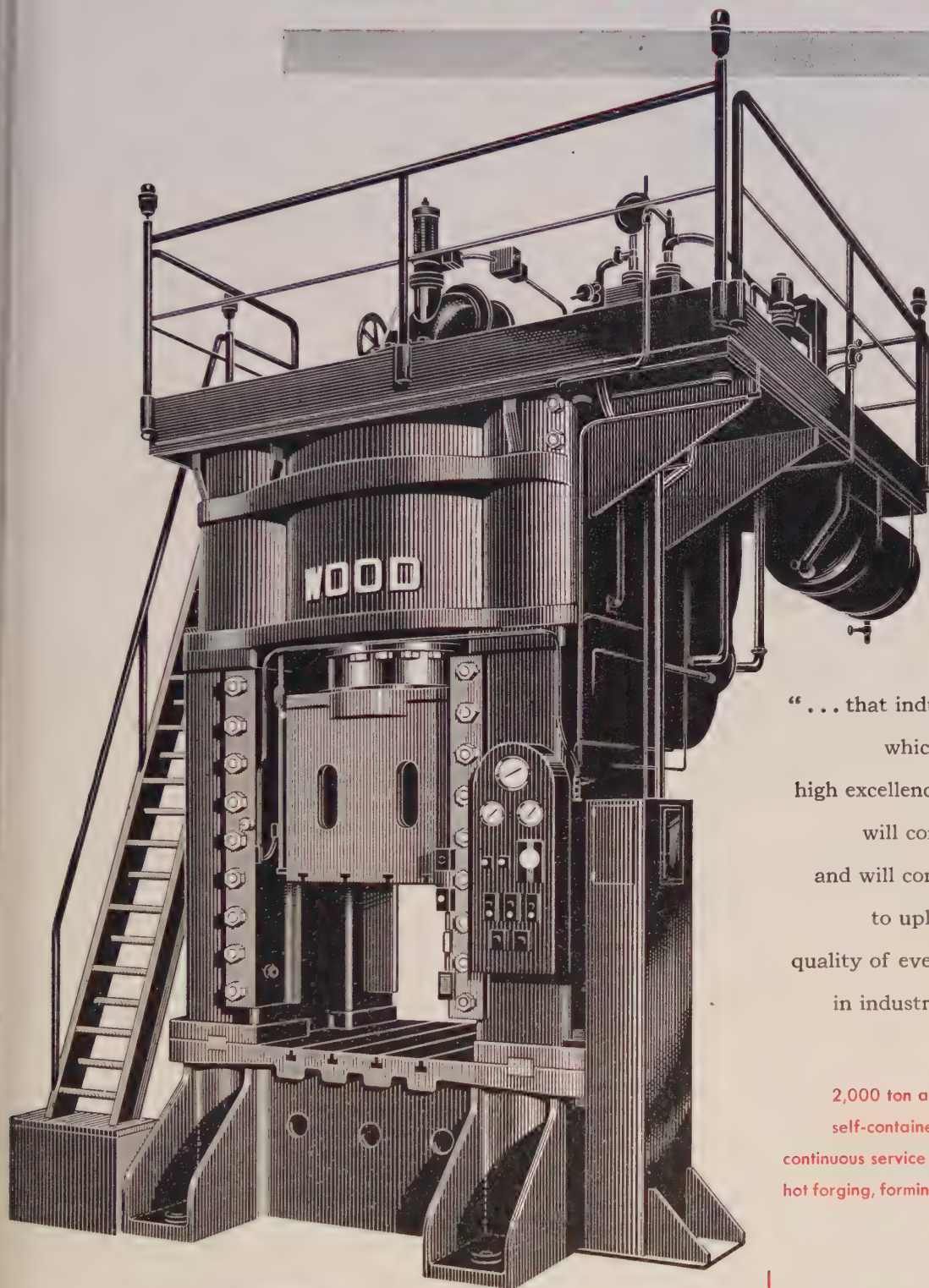
as carbon, straight chromium stainless being one possible exception. Buttweld pipe stocks are in balance but mechanical tubing and seamless in smaller sizes are short. Defense orders are off slightly, this being attributed to a lag in placing new contracts for components.

Cincinnati—Warehouse stocks in some instances are as low as they have ever been. Complaints are being made that the mills are not delivering the full warehouse allotments. Distributors are selling everything they can get in.

Los Angeles—Unlike the last warehouse price rise in December, the current hike in prices of warehouse steel has not dented demand at all. Inquiries are just as numerous and warehouse sales are sustained at the April level.

Vancouver, B. C.—The warehouse trade reports current volume of sales below the high levels of 1951 and 1952, the reason being the approaching completion of a number of major projects, both public and private. Present conditions have stymied mining expansion and the logging industry is not healthy. Pulp and paper mill construction is finished for the time being, all these factors reflected in reduced warehouse buying. Distributors' inventories are out of balance. It is difficult to get certain steel items from United States sources, particularly sheets, wide-flange beams and large rounds. Alloys are somewhat easier.

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self-contained hydraulic press for
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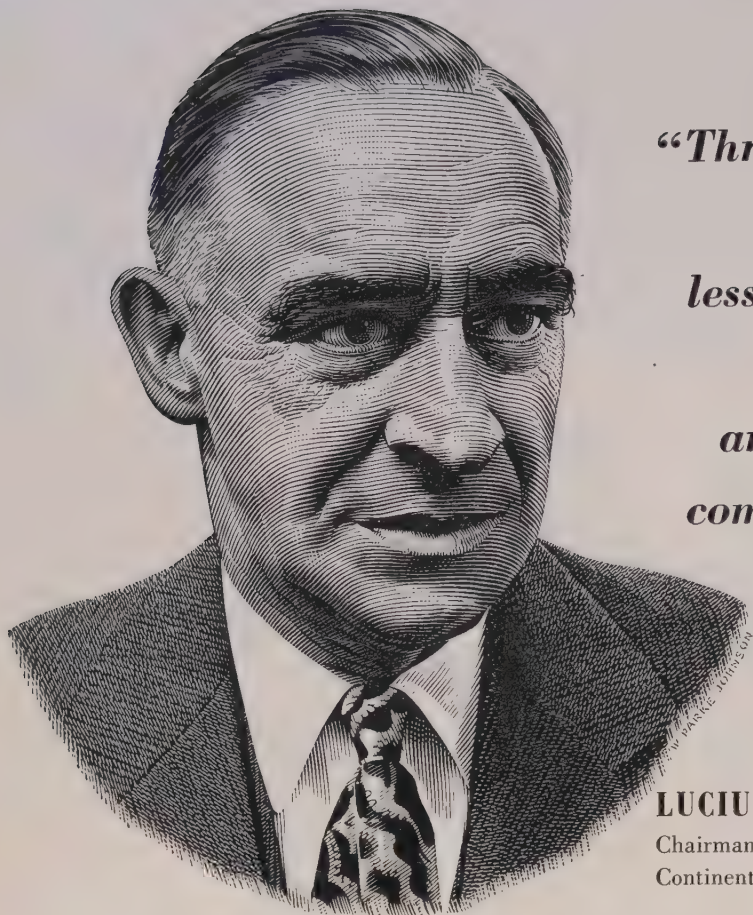


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LUCIUS D. CLAY

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STEEL
The Weekly Magazine of Metalworking



Demand for Sheets Continues To Climb

Inquiries exceed mills' ability to satisfy promptly and substantial carryovers into third quarter will be necessary. Trading in foreign and conversion markets gains

Sheet and Strip Prices, Page 195 & 196

Cleveland—Upward adjustment of prices through revision in extra cards is not yet completed. While most sheetmakers have issued new schedules on the major light flat-rolled items, such as hot and cold-rolled sheets, hot-rolled strip, electrical, enameling and galvanized sheets, some of them have yet to act on cold-rolled strip.

Republic Steel Corp. issued a new schedule on cold-rolled low carbon strip, effective May 22, this replacing a list that had been in effect since Nov. 30, 1950. Other producers are expected to take similar action this week. Changes in the schedule apply to quantity, edge, width and length tolerances, restrictive test requirements, special quality treatment, chemical requirements, and packaging.

Republic also issued a new schedule of extras on galvanized and oven lining sheets, effective May 22. This card also replaces one in effect since Nov. 30, 1950. Changes are made in extras for weight and thickness, size, commercial coating, quantity, and packaging.

Demand for the flat-rolled products continues to out-run producers ability to meet promptly and prospects are no supply relief is likely before fourth quarter. Substantial carryover from second to third quarter is indicated. With summer vacations beginning July, there is little expectation production will gain further.

Also, staring producers in the face is the possibility of a strike at the end of June should present wage negotiations break down. This latter possibility is reflected in a quickening of inquiry from consumers seeking protective coverage.

Boston — While cold-rolled strip users are paying \$5 to \$7 per ton more under new extras, most important change is in quantity differentials. Base is now 10 tons; formerly base was three tons which now carries a \$10 extra. Consensus is this will eventually mean more slitting.

Cold strip is booked through third quarter with converters concerned as to supply and balance in hot-rolled to meet commitments. Guaranteed al-

lotments to converters are out after June 30, five high military ratings excepted; these do not account for more than 15 per cent of total volume with most rerollers. Most will go back to normal customer relationship with suppliers if possible.

Philadelphia—Inquiry for hot and cold sheets is in heavier volume than ever and some improvement is noted in galvanized, which throughout the spring has been lagging. Producers ascribe betterment in galvanized to seasonal influences and claim they

have no particular difficulty in moving output. However, they do not have the backlogs noted in other major grades. Actually, most mills will go into the third quarter with arrearages of over a month on hot and cold sheets and appreciable arrearages in enameling stock and electrical sheets.

New York—Pressure for hot and cold sheets is as strong as at any time this year and much the same applies to such specialties as electrical sheets and enameling stock. Demand for galvanized sheets is less active than these other grades, although somewhat stronger than a month ago, probably reflecting seasonal conditions in the housing construction and maintenance field. At least certain producers of galvanized say that they are now having no

(Please turn to Page 202)

Shipments of Finished Steel Are At Record Pace

New York—Shipments of finished steel products were record-breaking during March, totaling 7,436,919 net tons, the American Iron & Steel Institute reports. The previous monthly record was set in October, 1952, when shipments amounted to 7,155,919 net tons.

First quarter shipments also set a new record at 21,057,464 tons, and were 1.2 million tons or 6 per cent above shipments in the like quarter of last year.

Among products showing substantial increases over shipments in the

first quarter last year were rails, hot-rolled and cold-finished bars, oil country goods, mechanical tubing, electrolytic tin plate, sheets and semi-finished items.

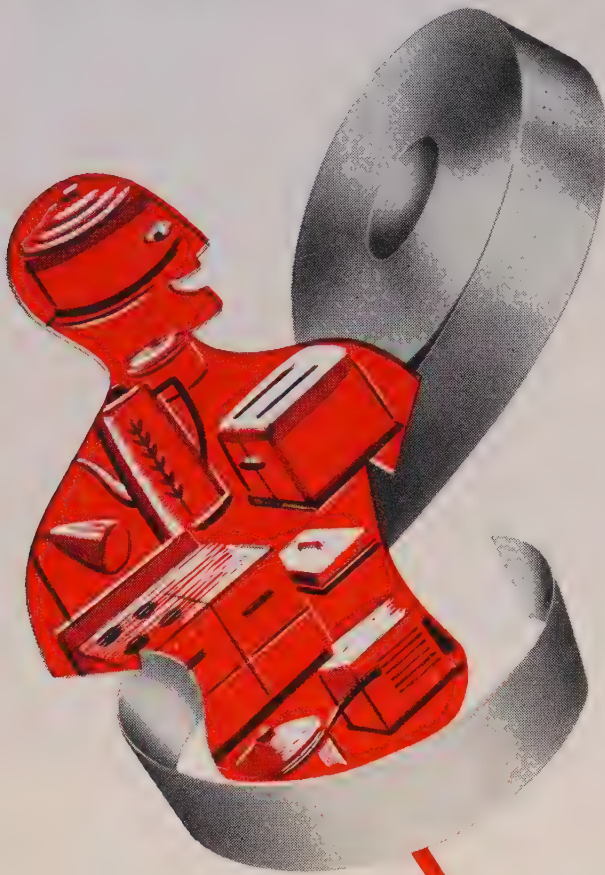
Shipments of stainless steel products increased several times as rapidly as carbon steel, the total of 169,222 tons in first quarter being 24 per cent greater than in the like period of 1952. Shipments of other alloy products rose 10 per cent to 1,615,287 tons in the period.

Shipments in the first quarter are shown in the accompanying table:

SHIPMENTS OF STEEL PRODUCTS—First Quarter 1953
(All grades, including carbon, alloy and stainless)

Product	(Net Tons)			
	Carbon	Alloy	Stainless	Total
Ingots	302,438	66,590	6,235	375,263
Blooms, slabs, billets, sheet bars, etc.	571,464	164,659	5,963	742,086
Skelp	27,340	.....	.....	27,340
Wire rods	232,620	6,182	2,378	241,180
Structural shapes	1,210,402	19,006	61	1,229,469
Steel piling	80,793	6	.....	80,799
Plates	1,962,346	109,161	8,512	2,080,019
Rails—standard	456,131	47	.....	456,178
Rails—all other	26,043	15	.....	26,058
Joint Bars	26,638	.....	.....	26,638
Tie plates	105,133	.....	.....	105,133
Track spikes	28,797	.....	.....	28,797
Wheels	88,169	119	.....	88,288
Axles	51,308	132	.....	51,440
Bars—hot rolled	1,867,736	645,216	13,338	2,526,290
Bars—reinforcing	475,107	.....	.....	475,107
Bars—cold-finished	506,933	102,306	17,626	626,865
Tool steel	4,702	25,630	.....	30,332
Standard pipe	765,590	115	6	765,711
Oil country goods	436,301	51,141	.....	487,442
Line pipe	665,745	153	.....	665,898
Mechanical tubing	217,286	82,583	1,755	301,624
Pressure tubing	108,574	13,634	4,425	126,633
Wire—drawn	804,396	16,502	10,830	831,728
Wire—nails and staples	142,965	.....	2	142,967
Wire—barbed & twisted	55,117	.....	.....	55,117
Wire—woven fence	84,696	.....	.....	84,696
Wire—bale ties	8,368	.....	.....	8,368
Black plate	227,048	.....	.....	227,048
Tin & terne plate—hot dipped	357,353	.....	.....	357,353
Tin plate, electrolytic	897,508	.....	.....	897,508
Sheets—hot rolled	1,864,920	86,622	5,213	1,956,755
Sheets—cold rolled	2,586,292	33,628	34,291	2,654,211
Sheets—galvanized	590,209	11	.....	590,220
Sheets—other coated	63,785	.....	.....	63,785
Sheets—enameling	54,039	.....	.....	54,039
Electrical sheets & strip	34,625	175,685	.....	210,310
Strip—hot rolled	584,861	10,192	1,073	596,126
Strip—cold rolled	499,177	5,952	57,514	562,643
Total	19,272,955	1,615,287	169,222	21,057,464

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FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa.

Rochester, N.Y.

Fairfield, Conn.

(Continued from Page 201)

difficulty in moving their production. Demand for hot strip is fairly brisk with some sellers counting on arrears of almost a month at the end of this quarter.

Cincinnati—The mills are continuing to run out all of the sheet steel they can manufacture, but they still cannot meet the demand. Customers are clamoring for light gage cold-rolled sheets. They also want hot-rolled and pickled sheets. Warehouse inventories of these items are dwindling due to short allocations which are never made up to complete full allocation from the mills. Strip in $\frac{1}{8}$ in. and $\frac{3}{16}$ in. sizes is plentiful.

Pittsburgh — Producers of steel sheet in this district agree that the supply picture is tighter than it has been since the mills went back to full production following last year's strike.

Some new inquiries have been received for conversion tonnage during the third quarter, but the overall opinion is that conversion will begin to show signs of weakening about that time. During the fourth quarter, there is some belief that conversion will be nonexistent.

Increases in extras have brought a noticeable change in the buying habits of some customers. They are analyzing extra books carefully to determine what purchases they might make that will result in a lower net price for the sheet they need.

Sheet mills are expecting to reach Sept. 30 with a sizable carryover, provided that automotive and appliance demand continues strong. There seems little evidence that consumers are piling up inventories in anticipation of a base price boost.


Some foreign hot and cold-rolled sheet is finding a ready market despite the fact that it is not too reliable gage-wise.

Chicago — There's nothing in the sheet demand picture which suggests that a balance between demand and supply is close at hand. Yet mills are well aware that such a situation could come pretty fast if big users like automotive and household appliance makers should start trimming their requirements. Electrical sheet are taking on new strength, reflecting heavy needs for fractional horsepower motor manufacture in the few months ahead.

Atlanta, Ga.—Atlantic Steel Co. has issued a revised list of extras on basic open-hearth new billet hot-rolled strip under $\frac{1}{4}$ -in. thick. New schedule became effective May 20.

Los Angeles—In some instances, shortage of sheets is forcing fabricators to desperate measures to keep

Northern Cranes

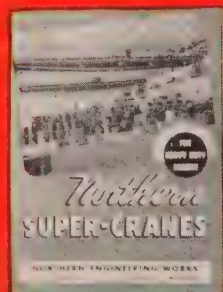


for better electrical layout

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production lines moving. One fabricator is buying galvanized sheet from the Pittsburgh plant of Columbia-Steel Division, U. S. Steel Corp., pickling it to remove the coating to get cold-rolled sheet and strip.

Steel Bars . . .

Bar Prices, Page 194

Boston — Consumers of hot and cold-finished commercial bars find that chemistry extras are a major factor in higher cost. Size is also important; extra for 1 in. rounds, formerly carrying an extra of 10 cents per 100 pounds, has advanced to 31 cents. Size base for carbon bars is 2 in. and 2½ in. Only cold-finished in smaller sizes is in sufficient supply to meet demand. Mills not filled of hot-rolled and cold-drawn bars in larger sizes for third quarter are booking on monthly basis.

New York — Leading bar sellers are opening books on hot alloy steel for fourth quarter on a limited basis. Meanwhile, they are not going beyond third quarter on hot carbon and are as fully committed for that period as they care to be. Most hot carbon bar producers will have a carryover from the current quarter of 1 month or more. As a result, some are blanking out the entire month of July while others are spreading time a bit by curtailing allotments to some extent in August.

Philadelphia — The leading hot carbon bar producer anticipates a carryover into third quarter of a month to six weeks, depending upon size of bars. The heaviest arrearages are in the large and small diameter sizes of one inch or under, for the smaller, and three inches and over for the larger. Most bar mills are practically covered for the entire third quarter; those, who are not, could be if they cared to accept all tonnage offered. Inquiry is still well in excess of supply.

Cincinnati — Alloy bar inventories have improved slightly. Business in this line remains steady. Carbon bar inventories are down a bit. The supply situation is best in the lighter sizes under 1 in. Machine tool and screw machine shops are continuing to consume large amounts of the heavier sizes.

Vancouver, B. C. — Vancouver rolling mills report a monthly production of roughly 3000 tons (capacity) of bars, angles and merchant bars. Demand for reinforcing bars has been adversely affected by last year's imports from Japan and Belgium costing more than domestic on which some importers are reported to have taken a loss, finding it necessary to cut prices in order to dispose of these shipments.

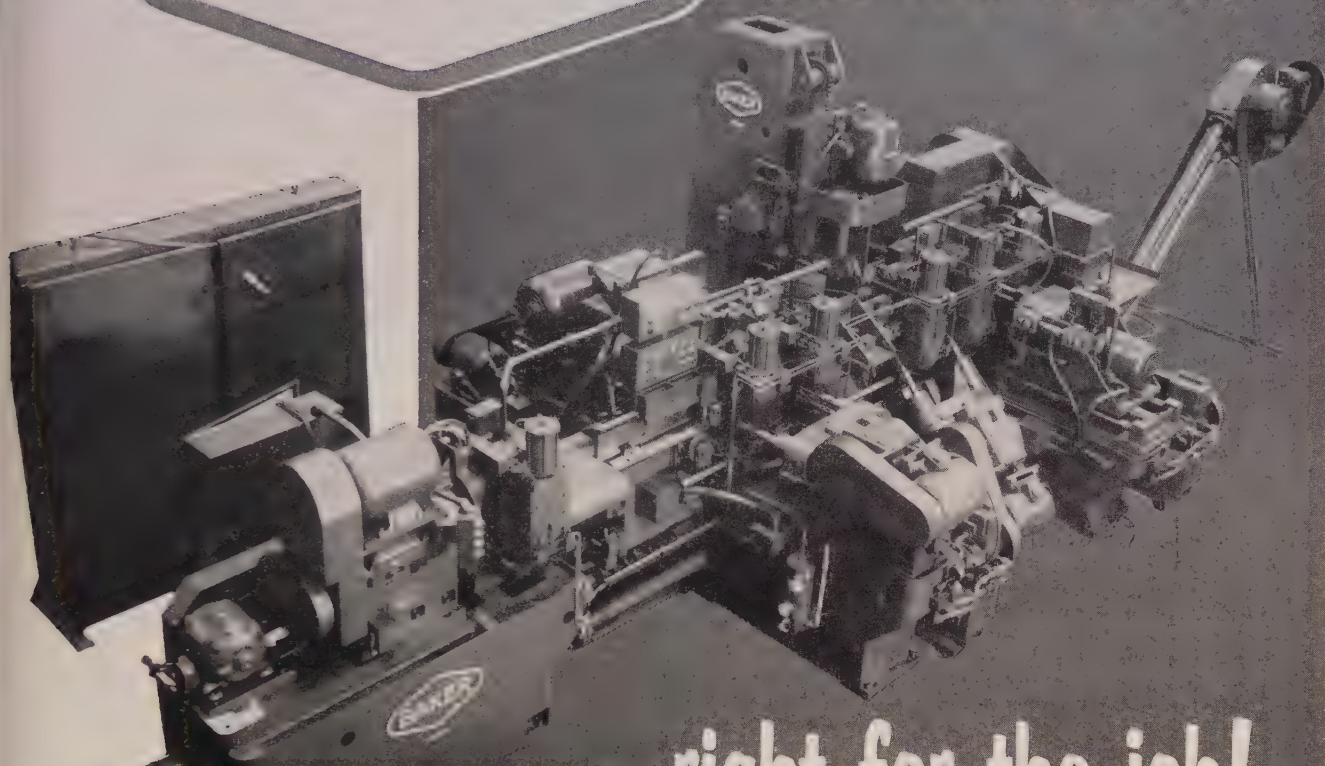
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STANDARD or SPECIAL

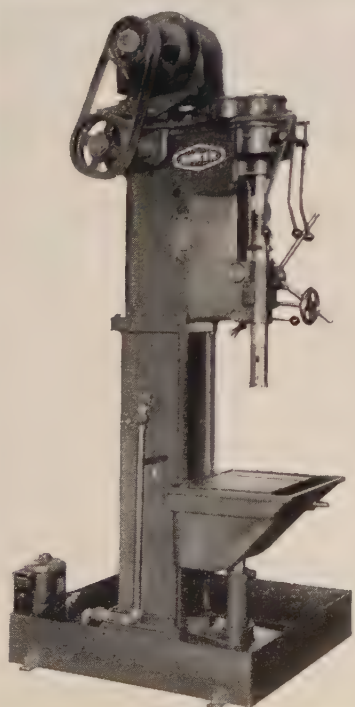
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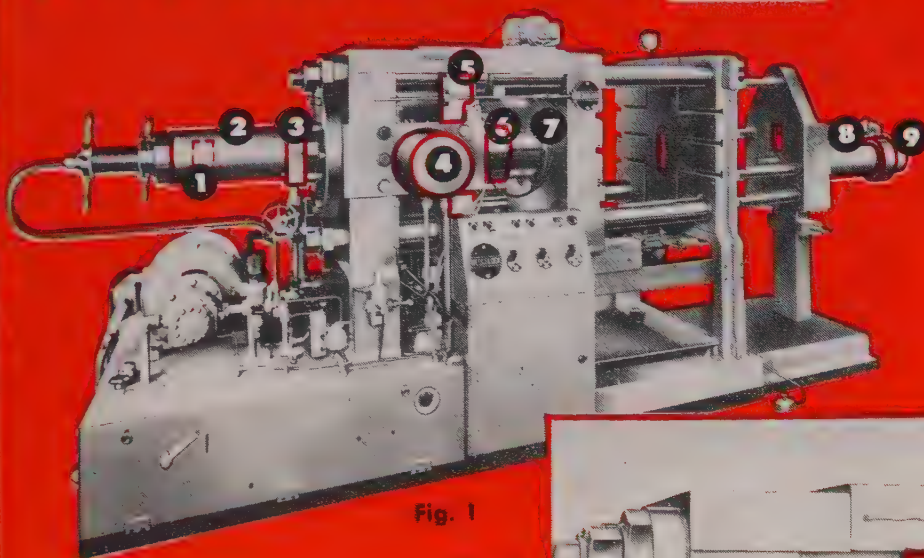
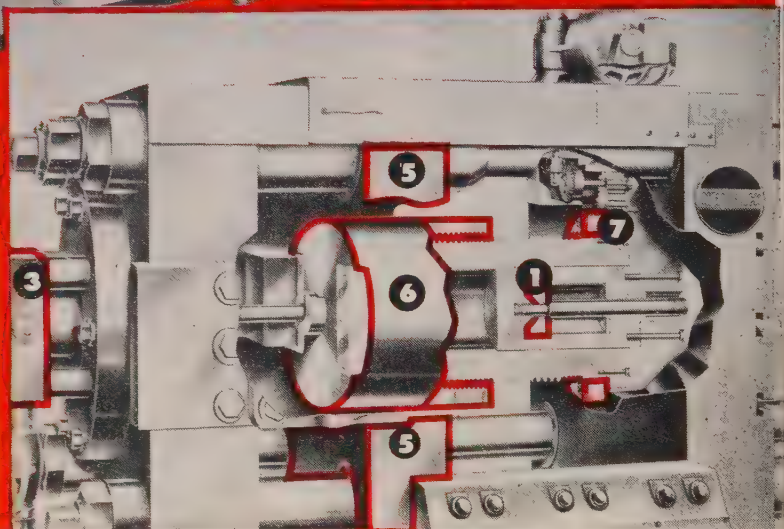


Fig. 1

Fig. 2

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- 3 CYLINDER ROD HEAD
- 4 CYLINDER SLEEVE
- 5 PLATEN
- 6 ADJUSTING NUT
- 7 RETAINING RING
- 8 CYLINDER SLEEVE
- 9 CYLINDER HEAD

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The American Laundry Machinery Co.	Rochester, New York
Atlas Foundry Co.	Detroit, Michigan
Banner Iron Works	St. Louis, Missouri
Barnett Foundry & Machine Co.	Dover, and Irvington
E. W. Bliss Co.	Hastings, Mich. and Toledo, O.
Builders Iron Foundry	Providence, Rhode Island
Compton Foundry	Compton, Calif.
Continental Gin Co.	Birmingham, Alabama
Crawford & Doherty Foundry Co.	Portland, Oregon
The Cooper-Bessemer Corp.	Mt. Vernon, Ohio and Grove City, Pa.
De Laval Steam Turbine Co.	Trenton, New Jersey
M. H. Detrick Co.	Newark, N. J. and Peoria, Ill.
Empire Pattern & Foundry Co.	Tulsa, Oklahoma
Farrel-Birmingham Co., Inc.	Ansonia, Connecticut
Florence Pipe Foundry & Machine Co.	Florence, New Jersey
Fulton Foundry & Machine Co., Inc.	Cleveland, Ohio
General Foundry & Manufacturing Co.	Flint, Michigan
Greenlee Foundry Co.	Chicago, Illinois
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The Stearns-Roger Manufacturing Co.	Denver, Colorado
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Order Backlog Increases

San Francisco—Allegheny Ludlum Steel Corp., Pittsburgh, has a backlog of orders of about \$70 million, equivalent to between three and three and one half months' production, according to E. J. Hanley, president.

Mr. Hanley on a visit here last week said the company's books are not opened for the fourth quarter as yet. He said the order backlog actually has increased in the last two months and added that a few soft spots "seem to have corrected themselves."

Demand for tool steel, which was weak last year, has picked up recently and so have orders for stainless steel castings, he noted.

Clark W. King, executive vice president, who accompanied Mr. Hanley on his visit, said every effort is being made to step up production of titanium to ten tons a day, which may be accomplished by July, at the Henderson, Nev., plant of Titanium Metals Inc. The plant, jointly owned by Allegheny Ludlum and National Lead Co., now produces about 4½ tons a day.

Plates . . .

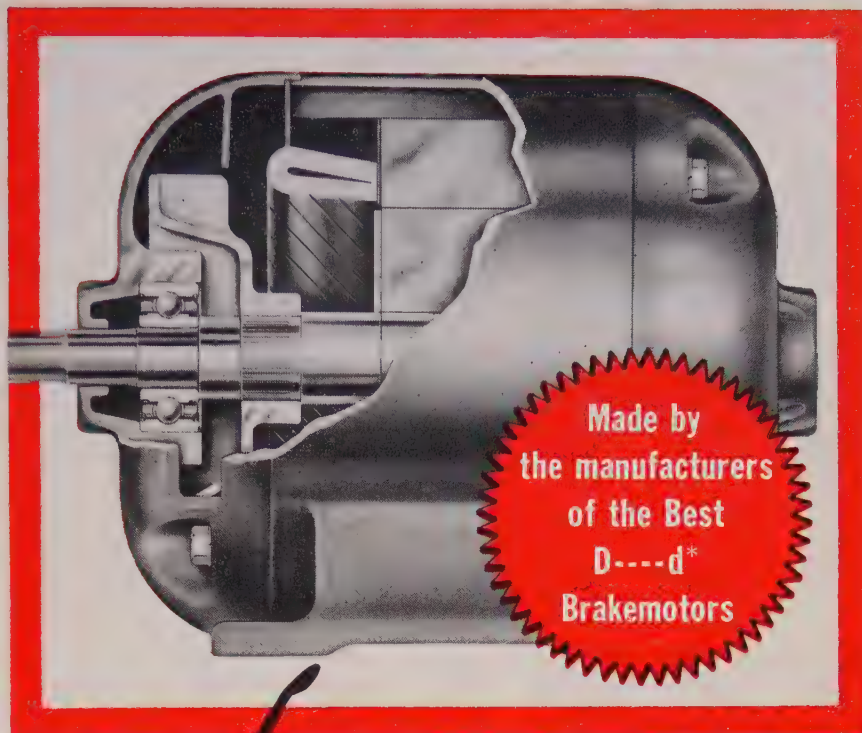
Plate Prices, Page 194

New York — Plate producers see little letup ahead over the next several months. They anticipate sufficient business to absorb all production in sheared and universal plate over the third quarter and well into the fourth quarter; and any such letdown as may develop in the last three months of the year will not be sharp, they believe. Some eastern mills, acting on a month-to-month basis, are only now setting up allotments for August; others who have opened for the entire fourth quarter, are practically covered for that period. The only reason they are not fully committed apparently is due to conservatism in acceptance of tonnage.

Philadelphia—While some district plate mills are only now accepting non-rated tonnage for August, others are practically covered for the entire third quarter, and could be well more than sold out if they were inclined to accept all tonnage offered. In general, producers are optimistic over the second half. Fourth quarter may see some slowing up, but no serious dip in plate mill operations is expected. Demand from fabricators of pressure vessels is particularly strong.

Boston—New size extra of \$3 per ton advances plates under ½-in.; width extra for "48 to 60 in." is also \$3.

At least two sheet-strip mills rol-



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You get *Longer* service life when you specify **STAR-KIMBLE** squirrel-cage motors

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—three separate wrappers on every coil—provides added safety factor for possible rises above rated temperature.

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keeps motor windings cool.

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of skewed rotor minimizes vibration.

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ling narrow, light plates have gone back to production on sheets; a tightening in supply of plates in this category is developing. Producers who are scheduling on a monthly basis have filled their books for August. Some plate shops have heavier inventories, but none are overstocked. Navy specifications are slightly higher.

Deliveries on head and flanged plate range from 8 to 13 weeks, depending on size.

Straight chromium clad shipments are around two months; 18-8 clad, four months. The latter product is chiefly for defense requirements and total clad accounts for about 6 per cent of the military volume.

Pittsburgh—Any slight letup in military demand is not noticeable at present among district producers because of the current high demand.

One producer in the area is looking closely at the cost of producing plates, with an eye to getting out of the market as soon as current commitments are fulfilled. The present high costs of producing plates has made the sheet market seem much more lucrative. In fact, producers admit, somewhat reluctantly, that a more substantial ingot tonnage is easing its way into sheet mills, rather than plate mills.

Los Angeles—Gap between supply and demand for plate is widening. To get current on arrearages, Kaiser Steel Corp. has blanked out August; Bethlehem Pacific Coast Steel Corp. will use July for carryover. Columbia-Geneva Steel Division, U. S. Steel, cannot accept any new orders for plate in third quarter.

Conversion Market Is Active

Chicago—Strength of the conversion steel market continues to be an index of supply tightness. Facilities for such tonnage are fairly well committed through third quarter and there are numerous deals almost in the closing stage. Some of these would be for fourth quarter. Bulk, of course, comes from the starved automotive industry which still sees no prospect of getting required tonnages from normal mill sources.

Product needed most urgently is cold-rolled sheets, although hot-rolled sheets and bars are in heavy demand.

Household appliance makers no longer show interest in conversion steel or any premium steel for that matter. Farm implement makers still are interested, but only to extent that certain items are needed to balance out steel inventories. One midwestern mill has made a conver-

sion deal on electrical sheets. This is rather unusual and reflects the demand for fractional horsepower motors.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 194

Los Angeles—Construction activity, reaching historical peaks, is causing intense price competition for jobs among fabricators. Valuation of commercial construction is 78 per cent higher than last year; industrial construction, 83 per cent higher.

Seattle—Current volume of rolling mill business is mostly in lots of less than 100 tons each for industrial plants, schools and general construction, the total reaching fair proportions. Several sizable jobs, largely for public works, are pending.

Tubular Goods . . .

Tubular Goods Prices, Page 197

Pittsburgh—Seamless steel tubing is taking the edge over butt weld, but the latter product is still enjoying a healthy demand. A strong seamless demand is expected through the end of this year. Some producers expect a weakening in butt weld demand sometime in the third quarter.

Fretz-Moon Tube Co., Butler, Pa. issued its revised discount card which reflects a general downward revision of pipe discounts. These conform to the changes in discounts that are general in the industry, and result in an increase in price of butt weld standard pipe in sizes $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{3}{8}$ in.

Pittsburgh—Babcock & Wilcox Co. is preparing a revised list of electric weld boiler tube prices reflecting a general increase. This announcement follows closely the company's publication of increased prices for seamless boiler tubes, which are incorporated in the current issue of STEEL, along with the new prices announced by National Tube Co.

Boston—Slackening demand for butt weld pipe is accompanied by slight easing in pressure for other tubular products; distributors have narrowed sizes in seamless on which they will take tonnage, four to six inches most active. Light walled welded carbon tubing is slow with prices inclined to soften with some suppliers; stainless is firm in price but less active.

New York—Although some of the smaller distributors of merchant pipe are by-passing monthly mill allotments on occasion, they are the exception. Some, who are not by-passing, are selling their tonnage at a discount. There is still a fairly active demand for merchant pipe.

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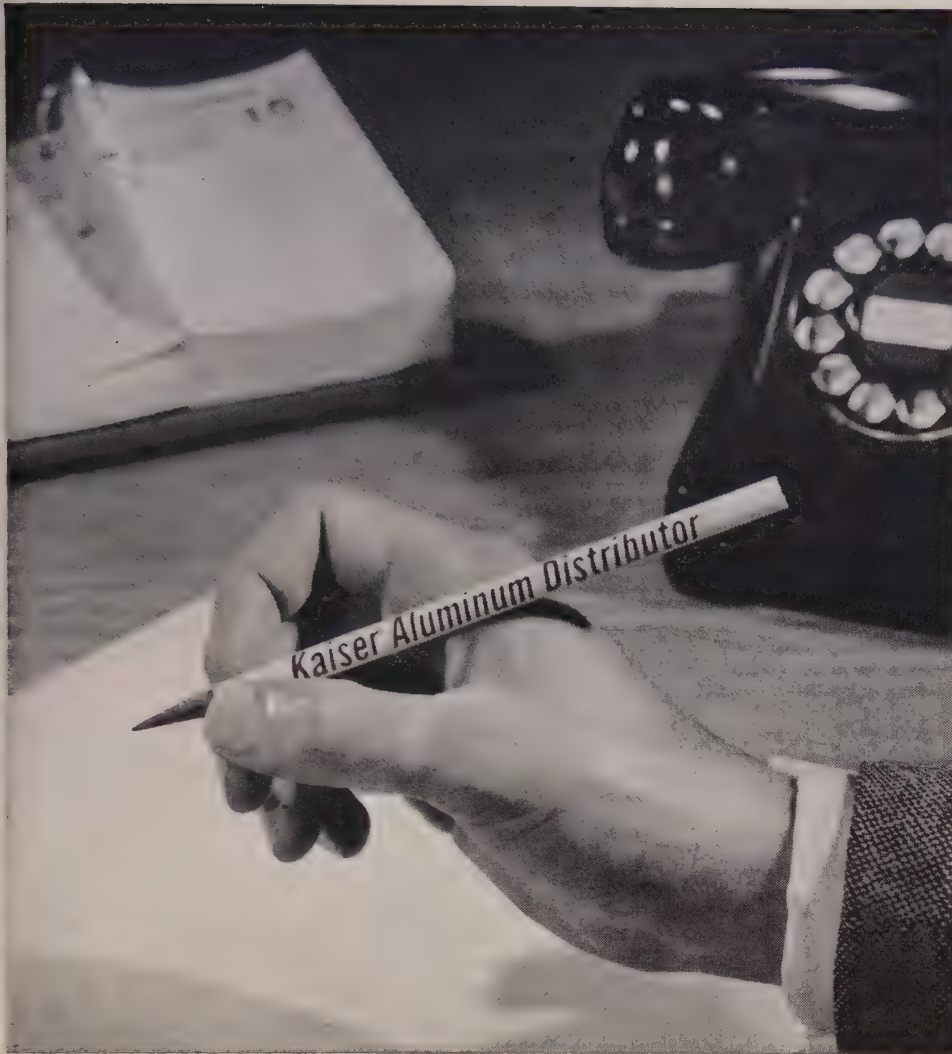


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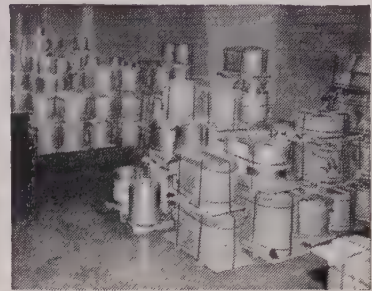
◀ Your nearest Kaiser Aluminum distributor is listed at the left. Call him **TODAY**.

Kaiser Aluminum

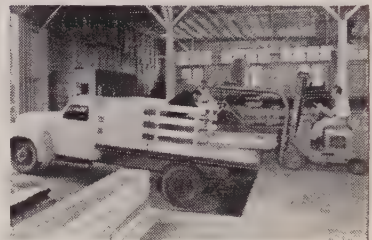
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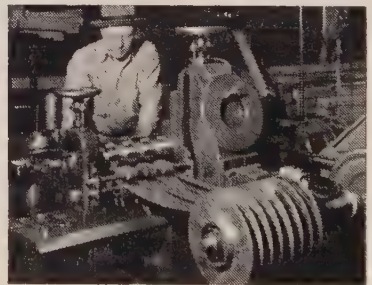
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CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, \$85, Palmerton, Pa.; \$85, Pittsburgh and Chicago; (16% to 19% Mn) \$1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk \$225 per gross ton of alloy, c.l. packed \$237; gross ton lots, packed, \$252; less gross ton lots, packed, \$269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: \$227, Johnstown, Pa.; \$226, Anaconda, Mont. (Mn 74-76%, C 7% approx.) Base price per net ton \$200, Etna, Pa.

Shipment from Pacific Coast warehouses by one seller, add \$33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots \$267; less gross ton lots, \$284, f.o.b. Chicago. Add or subtract \$2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95¢ per lb of contained Mn. carload packed 28.7¢, ton lots 29.8¢, less ton 31.0¢. Delivered. Deduct 0.5¢ for max. 0.15% C grade from above prices, 1¢ for max. 0.30% C, 1.5¢ for max. 0.50% C, and 4.5¢ for max. 75% C—max 7% Si. Special Grade: (Mn 90% min, C 0.07% max, P. 0.06% max). Add 0.5¢ to the above prices. Spot, add 0.25¢.

Medium-Carbon Ferromanganese: (Mn 80-85%, C. 1.5% max). Carload, lump, bulk 21.35¢ per lb of contained Mn, carload packed 22.1¢, ton lot 23.2¢, less ton 24.4¢. Delivered. Spot, add 0.25¢.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2¢ per lb of metal; packed, 36.95¢; ton lot 35.45¢; less ton lots 40.45¢. Delivered. Spot, add 2¢.

Electromanganese: Carload, 30¢; ton lots, 32¢; 250 to 1999 lb, 34¢. Premium for hydrogen-removed metal, 1.5¢ per pound, f.o.b. cars Knoxvill, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4¢ per lb of alloy, carload packed, 12.15¢, ton lots 13.05¢, less ton 14.05¢. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2¢ from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5¢ from above prices. Spot, add 0.25¢.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Ti 33-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis, Spot add 5¢.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract \$177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract \$195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 24.75¢ per lb of contained Cr, c.l. packed 25.65¢, ton lot 26.80¢, less ton 28.20¢. Delivered. Spot, add 0.25¢.

Low-Carbon Ferrochrome: (Cr. 67-72%) Contract, carload, lump, bulk, max. 0.03% C, 37.60¢ per lb contained Cr, 0.04% C 35.50¢, 0.06% C 34.50¢, 0.10% C 34.00¢, 0.15% C 33.75¢, 0.20% C 33.50¢, 0.50% C 33.25¢, 1% C 33.00¢, 1.50% C 32.85¢, 2% C 32.75¢. Carload packed add 1.1¢, ton lot 2.2¢, less ton add 3.9¢. Delivered. Spot, add 0.25¢.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25¢ per lb of contained Cr. C.l., packed 27.15¢, ton 28.50¢, less ton 30.25¢. Delivered. Spot, add 0.25¢.

Foundry Ferrochrome, Low Carbon: (Cr. 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35¢ per lb of alloy; ton lot 19.2¢; less ton lot, 20.4¢, delivered; spot, add 0.25¢.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75¢ per lb of contained chromium plus 12.4¢ per pound of contained silicon; 1" x down, bulk 25.90¢ per pound of contained chromium plus 12.60¢ per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75¢ per lb of contained silicon plus 18.4¢ per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% ton lots \$1.14, less ton \$1.16. Delivered. Spot, add 5¢; prices on 0.10 per cent carbon grade, C grade, \$1.12 per lb of contained chromium, up 4¢.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0¢ per lb of alloy, carload packed 20.8¢, ton lot 22.3¢, less ton 23.3¢. Delivered. Spot add 0.25¢.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0¢ per lb of alloy, carload packed 20.2¢, ton lot 22.1¢, less ton 23.6¢. Deld. Spot add 0.25¢.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0¢ per lb of contained Si, packed 21.40¢; ton lot 22.50¢, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40¢ per lb of contained Si, carload packed 14.0¢, ton lot 15.45¢, less ton 17.1¢. Delivered. Spot, add 0.45¢.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3¢ to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3¢ per lb of contained Si, carload packed 15.6¢, ton lot 16.75¢, less ton 18.0¢. Delivered. Spot, add 0.8¢.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0¢ per lb of contained Si, carload packed 18.2¢, ton lot 19.15¢, less ton 20.2¢. Delivered. Spot, add 0.25¢.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5¢ per lb of Si, c.l. packed 19.7¢, ton lot 20.6¢, less ton 21.6¢. Add 0.5¢ for max. 0.10% calcium grade. Deduct 0.5¢ for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25¢.

Alsilfer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90¢ per lb of alloy, ton lots packed 11.30¢, 20 to 1999 lb 11.65¢, smaller lots 12.15¢.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump bulk 7.0¢ per lb of alloy, c.l. packed 7.75¢, ton lot 8.5¢, less ton 9.35¢. Delivered. Spot, add 0.25¢.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25¢ per lb of alloy, ton lot 21¢, less ton 22.25¢ Freight allowed. Spot add 0.25¢.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, \$3.10 per lb of contained V. Delivered. Spot, add 10¢

Crucible-Special Grades (V 35-55%, Si 2-3.5% max, C 0.5-1% max), \$3.20. Primos and High Speed Grades (V 35-55%, Si 1.50% max, C 0.20% max) \$3.30.

Grainal: Vanadium Grainal No. 1, \$1 per lb; No. 6, 68¢; No. 79, 50¢, freight allowed.

Vanadium Oxide: Contract, less carload lots \$1.28 per lb contained V₂O₅, freight allowed. Spot, add 5¢.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, \$4.35 per lb of contained W; 2000 lb W to 10,000 lb W, \$4.45; less than 2000 lb W, \$4.57, f.o.b. Niagara Falls, N. Y.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max., Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, \$1.20 per lb of alloy. Less than 100 lb \$1.30. Delivered, spot, add 5¢. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75¢ per pound; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si). \$5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45¢ per lb; smaller lots, 50¢ per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50¢ per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3 1/2 lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50¢ per lb of briquet, carload packed 15.2¢, ton lot 16.0¢, less ton 16.9¢. Deld. Add 0.25¢ for notching. Spot, add 0.25¢.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk, 12.45¢ per lb of briquet, c.l. packaged 13.25¢, ton lot 14.05¢, less ton 14.95¢. Delivered. Add 0.25¢ for notching. Spot, add 0.25¢.

Silicomanganese Briquets: (Weighing approx. 3 1/2 lb and containing exactly 2 lb of Mn and approx. 1/2 lb of Si). Contract, c.l. bulk, 12.65¢, per lb of briquet, c.l. packed 13.45¢, ton lot 14.25¢, less ton 15.15¢. Delivered. Add 0.25¢ for notching. Spot, add 0.25¢.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95¢ per lb of briquet, c.l. packed 7.75¢, ton lot 8.55¢, less ton 9.45¢. Delivered. Spot, add 0.25¢.

(Small size—weighing approx. 2 1/2 lb and containing exactly 1 lb of Si). Carload, bulk, 7.1¢, c.l. packed 7.9¢, ton lot 8.7¢, less ton 9.6¢. Delivered. Add 0.25¢ for notching. Small size only. Spot, add 0.25¢.

Molybdenic-Oxide Briquets: (Containing 2 1/2 lb of Mo each) \$1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max) Contract, ton lot, 2" x D, \$4.90 per lb of contained Cb, less ton \$4.95. Delivered. Spot, add 10¢.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, \$3.75 per lb of contained Cb plus Ta, deld.; less ton lot \$3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload, packed, 1" x D, 45¢ per lb of alloy, ton lot 47¢, less ton 49¢. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, 1/2" x 12 M, 17.5¢ per lb of alloy, ton lot 18.25¢, less ton 19.5¢. Deld. Spot, add 0.25¢.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18¢ per lb of alloy; ton lot 19¢; less ton lot 20.50¢, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15¢ per lb of alloy, ton lot 16.50¢; less ton lot 17.75¢, f.o.b. Niagara Falls; freight allowed to St. Louis.

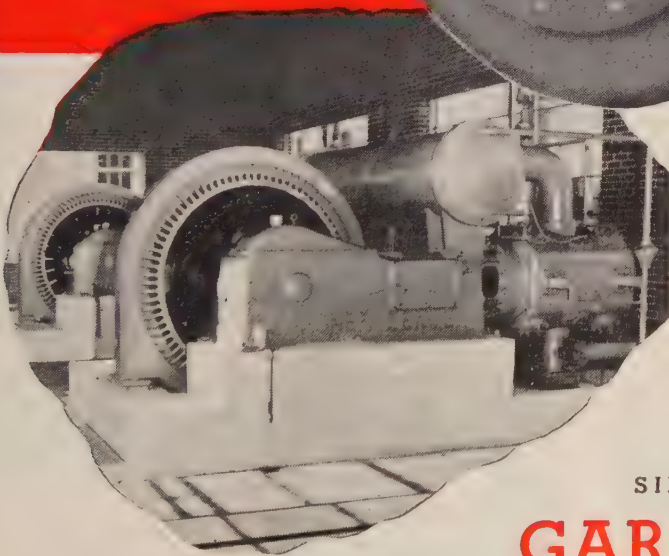
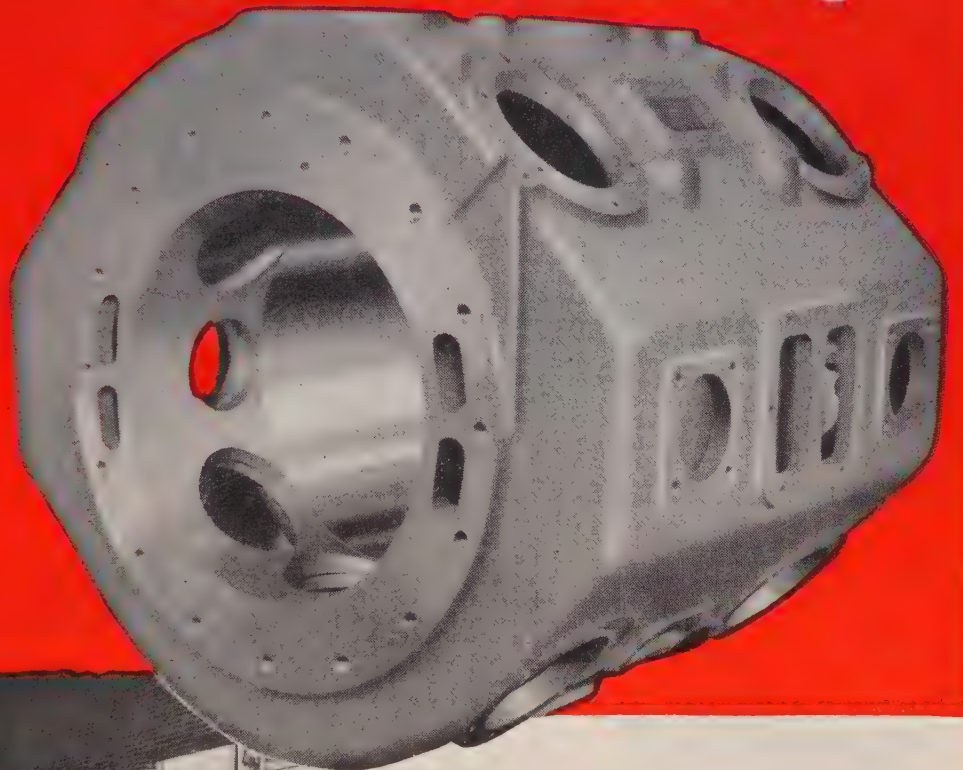
Simanal: (Approx. 20% each Si, Mn, Al; ball Fe) Lump, carload, bulk 14.50¢, packed 15.50¢, ton lots, packed, 15.75¢; less ton lot, packed, 16.25¢ per lb of alloy, delivered to destinations within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of \$3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$63 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo f.o.b. Langeloth, \$1.32 in all sizes except powdered which is \$1.41; Washington, Pa., furnace, any quantity \$1.32.

Technical Molybdenic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., \$1.14 in cans; in bags, \$1.13, f.o.b. Langeloth, Pa.; Washington, Pa., \$1.13.

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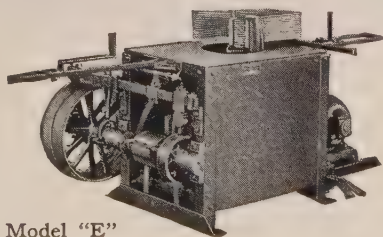
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ORES-COKE-REFRACTORIES

Prices as reported to STEEL; changes shown in Italic.

ORES

Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)
 Old range bessemer \$10.10
 Old range nonbessemer 9.95
 Mesabi bessemer 9.85
 Mesabi nonbessemer 9.70
 Open-hearth lump 10.95
 High phosphorus 9.70
 The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.
 Foundry and basic 56-62% concentrates contract 17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports
 Swedish basic, 60 to 68%: Spot nom.
 Long-term contract 22.00
 North African hematites (spot) 24.00-26.00
 Brazilian iron ore, 68-69% (spot) 25.00

Tungsten Ore

Net ton unit, duty paid
 Foreign wolframite and scheelite, per net ton unit \$55.00
 Domestic scheelite, mine 63.00

Manganese Ore

Manganese, 48% nearby, \$1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2:1 \$40.00-\$42.00
 48% 3:1 44.00-46.00
 45% no ratio 32.00-34.00

South African Transvaal

44% no ratio \$27.00-28.00
 48% no ratio 34.00-35.00

Brazilian

44% 2.5:1 lump nom. \$32

Domestic

(Rail nearest seller)
 48% 3:1 \$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines \$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., \$89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Urivston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., \$99.30; Salina, Pa., \$104.55; Niles, O., \$109; Los Angeles, Pittsburg, Calif., \$132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., \$99.30; Hays, Pa., \$105.10; Niles, O., \$107; E. Chicago, Ind., Joliet, Rockdale, Ill., \$109.70; Cutler, Utah, \$116.55; Los Angeles, \$122.85.

Insulating Fire Brick

2300° F: Massillon, O., \$178.50; Clearfield, Pa., \$179.55; Augusta, Ga., Beaver Falls, Zelenople, Pa., Mexico, Mo., \$186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., \$64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wells-

ville, O., \$69.30; Mexico, Mo., \$73.50; Clearfield, Pa., Portsmouth, O., \$83; Perla, Ark., \$92.00; Los Angeles, \$110.25; Pittsburg, Calif., \$111.30.

Sleeves

Reesdale, Pa., \$127; Johnstown, Pa., \$127.30; Clearfield, Pa., \$135; St. Louis, \$138; Athens, Tex., \$140.90.

Nozzles

Reesdale, Pa., \$203.20; Johnstown, Pa., \$208.40; Clearfield, Pa., \$219.45; St. Louis, \$224.65; Athens, Tex., \$225.20.

Runners

Reesdale, Pa., \$158.20; Johnstown, Pa., \$161.70; Clearfield, Pa., \$168.60; St. Louis, \$170.30; Athens, Tex., \$174.40.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., \$166.30; Danville, Ill., \$169.30.
 60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$210.20; Danville, Ill., \$213.20.
 70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$244.85; Danville, Ill., \$247.85; Clearfield, Pa., \$252.

METALLURGICAL COKE

Price per net ton
 Beehive Ovens

Connellsville, furnace \$14.50-15.00
 Connellsville, foundry 16.50-17.00
 New River foundry 20.80
 Wise county foundry 15.95
 Wise county, furnace 15.20

Oven Foundry Coke

Kearney, N. J. ovens \$24.00
 Everett, Mass., ovens *26.00
 New England, del. 24.50
 Chicago ovens 26.00
 Chicago, del. 24.05
 Terre Haute, ovens 25.25
 Milwaukee, ovens 24.25
 Indianapolis, ovens 28.12
 Chicago, del. 25.85
 Cincinnati, del. 25.50
 Painesville, O., ovens 27.43
 Cleveland, del. 25.00
 Erie, Pa., ovens 21.65
 Birmingham, ovens 26.58
 Cincinnati, del. 18.50
 LoneStar, Tex., ovens 23.95
 Philadelphia, ovens 23.85
 Swedeland, Pa., ovens 26.00
 St. Louis, del. 23.75
 St. Paul, ovens 24.00
 Portsmouth, O., ovens 26.62
 Cincinnati, del. 25.50
 Detroit, ovens 26.50
 Detroit, del. 28.08
 Buffalo, del. 28.23
 Flint, del. 27.06
 Pontiac, del. 28.58
 Saginaw, del.

*Or within \$4.55 freight zone from works.

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Spot, cents per gallon, ovens

Pure benzol 36.00
 Toluol, one deg. 30.00-33.00
 Industrial xylol 30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia \$44-45
 Birmingham area \$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums) 17.25

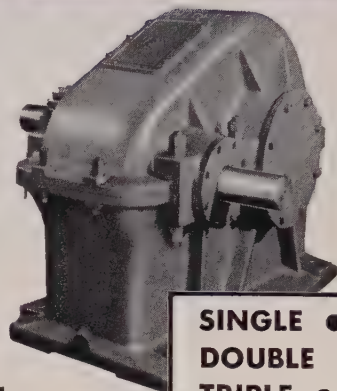
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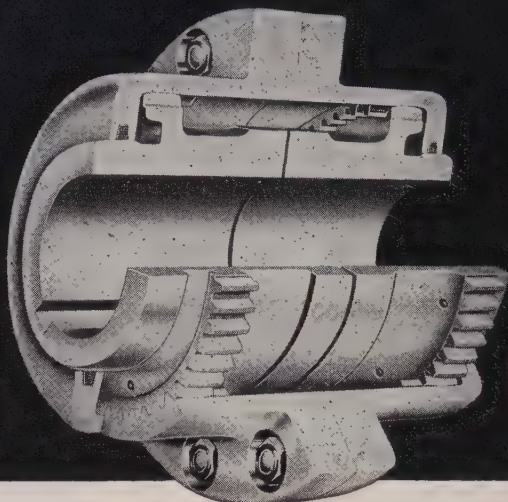
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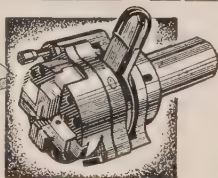
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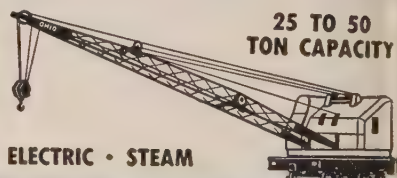
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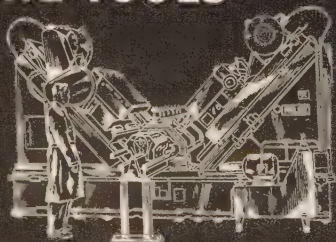
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By Albert Portevin

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Fasteners . . .

Bolt, Nut, Rivet Prices, Page 197

San Francisco—Bethlehem Pacific Coast Steel Corp. is producing around 1000 tons of bolts and nuts and other fasteners a month at its South San Francisco plant. Inventory is about 1600 tons, as compared with the lowest level of about 750 tons set during the war. Highest production was between 1200 and 1500 tons a month. The present production is considered "normal" as fasteners are about the most stabilized line in a steel firm's operations. A \$50,000 machine to roll thread 1½ in. diameter rod will be installed before the end of the year. The plant now has capacity to cut thread 2½ in. diameter rod. Largest "headed" bolts threaded are 1½ in. in diameter.

Wire . . .

Wire Prices, Page 196

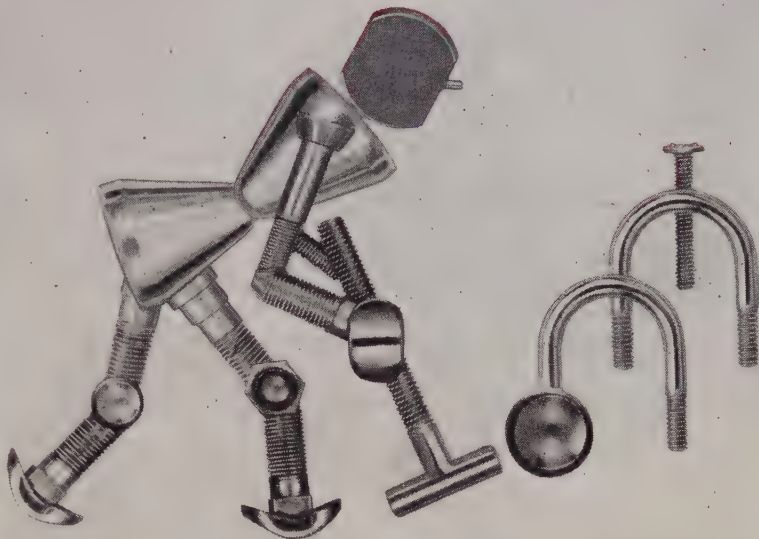
New York—Extras being applied to high carbon specialty wire products are substantially higher in ratio than increase in plain manufacturers' wire and other tonnage items. Requiring more man hours per ton and more processing, numerous specialties are being brought into line to share their cost load. Producers are well booked through third quarter on many grades, while there are openings in August on others. Upholstery spring wire is well sold ahead, notably to the automobile industry. In manufacturers' and heading wire some pressure is directed toward getting out June tonnage in advance of July closings.

Pittsburgh—Merchant wire products are showing a slight gain over their previous weak condition, but nothing like the usual seasonal increases in demand. Manufacturers' steel wire is faring better with an expected heavy demand at least through the second quarter and the better part of the third quarter.

American Steel & Wire increased prices on cold-rolled flat wire, high carbon spring wire, fine and weaving wire and fence posts. Fence posts produced at Duluth which formerly carried the same column are now divided into two classes: T-posts and U-posts. The former have been raised five columns, the latter, three.

Boston—Moderate decline in orders for upholstery spring wire follows exceptionally heavy demand for that product in recent weeks. In most instances this is due to larger inventories, including those of automotive items. Considerable pressure is exerted for shipments next month ahead of vacation periods. Thorough analy-

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sis of wire extras reveals larger increases are for products requiring more manhours per ton; prices for many specialties were more or less frozen under controls despite higher costs within the last year.

Establishment of commodity rate on plain steel wire in coils, \$3.05 net ton, Worcester to Bridgewater, Mass., minimum weight 56,000 pounds is proposed. Current rate is \$4 per net ton, 40,000 pounds minimum. This effects the rate to the nail specialties producer at Bridgewater.

Philadelphia — Manufacturers' wire is in continued good demand. Most manufacturers are booking ahead on a month-to-month basis but would have no difficulty in extending commitments if they cared to do so. Merchant wire demand is spotty, reflecting in part lagging agricultural demand.

Chicago — Demand for wire rope and strand is on the weak side with shipments current and inventories increasing. Welded fabric remains pinched with heavy requirements expected for some time. Stocks of the latter are shrinking. The merchant products picture is tightening somewhat; for manufacturers items, demand is in excess of production.

Structural Shapes . . .

Structural Shape Prices, Page 194

Boston—Structural shops are paying from \$5 to \$7 per ton more for beams, channels and angles; five-in. beam extras are up \$8, while the extras on eight to 15-in. are up an average of \$4. Higher costs for plain material are partially reflected in fabricated steel, but estimates are under competitive pressure, notably tonnages for smaller projects, 100 to 300 tons.

New York—Bridge work is being well sustained, and is bolstering an otherwise rather quiet market. Some believe that the hump of bridge demand will be passed in the next few weeks, with a resultant lag in structural activity generally.

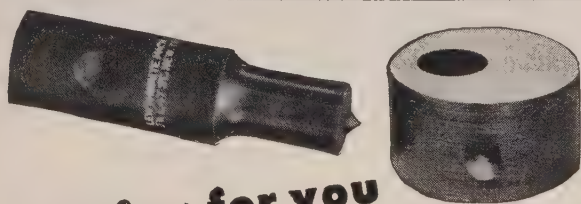
Philadelphia — Activity in the structural steel market in this area is spotty. Apart from miscellaneous bridge work there is little business outstanding. However, most fabricating shops are in comfortable position as to backlogs. Medium sized and large shops are booked up anywhere from six to eight months, allowing for an occasional break in schedule which would enable them to work in a moderate sized job without too much delay. Small shops are

booked up three to four months, for the most part.

Pittsburgh — Users of structural steel in the Pittsburgh district are facing a gloomy outlook. Substantially reduced allotments are likely for the second quarter. Loss of open hearth No. 3 at Homestead has been a heavy blow to consumers relying on Pittsburgh for structural steel. Some relief is in sight for Pittsburgh customers who are west of the area, in a district that might not suffer by a freight differential from the Chicago area. Effort is being made to divert some of this western tonnage to alleviate the present shortage. One group that might be a beneficiary is the carbuilders.

Vancouver, B. C.—Local fabricators, after two good years of active construction and several major projects, report conditions more competitive. Backlogs will carry through the third quarter, but with lesser major construction pending users are not buying so far forward as last year.

Seattle—With the settlement of a dispute with the metal trades unions, several fabricating plants that have been idle since Apr. 2 have resumed operations. The immediate concern is to complete orders that have been delayed six weeks. Shops that were



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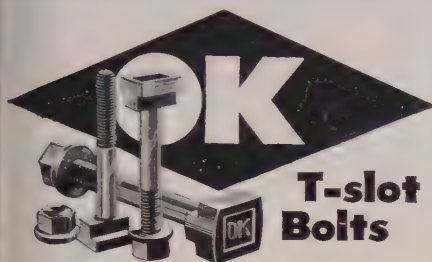
359 MIDLAND AVE. • DETROIT 3, MICH.

not affected are up to work schedules. Several important tonnages are involved in Alaska defense projects and sizable awards are expected soon. However, important plant additions are planned by the large oil companies in preparation for completion of the pipe line from Alberta this year.

Semifinished Steel . . .

Semifinished Prices, Page 194

Cleveland — Republic Steel Corp. has issued a new list of extras covering semifinished carbon steel, forging quality. The new schedule be-



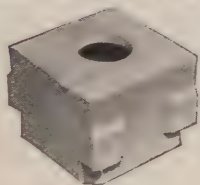
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came effective May 21 and replaces one in effect since Dec. 21, 1949.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 213

Pittsburgh—Arrangement has been made for Pittsburgh Consolidation Coal Co.'s Mathies mine to deliver the major portion of its 9000-ton daily output to National Steel Corp. and Youngstown Sheet & Tube Co. A substantial tonnage from the Har-mar and Renton mines also is expected to go to these companies.

Iron Ore . . .

Iron Ore Prices, Page 213

Cleveland—Shipments of Lake Superior iron ore amounted to 2,080,997 tons for the week ended May 25, bringing the season's cumulative total to 19,263,579 tons. This represents a gain of 3,072,622 tons or nearly 19 per cent over the total for the like 1952 period.

Pig Iron . . .

Pig Iron Prices, Page 190

Buffalo—Strikes in automotive and electrical industries are reflected in the merchant pig iron market here. Leading sellers report a number of big casters are paring production requirements as a result of labor disturbances in consumer product lines. No iron is being piled. However, an idle stack is expected to resume production within a week.

Boston—July shipments of pig iron will be smaller because of vacation suspensions; few users are adding to inventory. Melt of all grades will drop next month. Most shops lack sustained backlogs; some integrated shops report a slackening in contracts placed with machine tool makers.

New York—Pig iron consumption here reflects a further slight easing in operations at the gray iron shops. More shops are on a four-day a week basis than at any time this year, with prospects of little improvement in the near future. In fact, the vacation season, which will probably reach its peak during the first two weeks of July, will no doubt mark a new low rate before operations turn upward.

Philadelphia—Pig iron sellers are beginning to receive notices from foundries of their plans for closing down for vacations during the early part of July. Some will be down only a week; others, for two weeks; still others will not be down at all, deferring vacations to some time later.

Pig iron is moving only fairly. Most foundries are not building up stocks

(Please turn to Page 220)



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Engineering Offices or Sales Agencies in
Principal American and Canadian Cities
GENERAL OFFICES

Mathews Conveyor Company, Ellwood City, Penna.

PACIFIC COAST DIVISION

Mathews Conveyor Company West Coast
San Carlos, California

CANADIAN DIVISION

Mathews Conveyor Company, Ltd., Port Hope, Ont.

IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP
COMPOSITE

May 28	\$39.17
May 21	39.00
Apr. avg.	43.05
May 1952	43.00
May 1948	40.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	34.00-35.00
No. 1 bundles	39.00-40.00
No. 2 bundles	31.00-32.00
No. 1 busheling	39.00-40.00
Machine shop turnings...	25.00-26.00
Mixed borings, turnings...	25.00-26.00
Short shovel turnings...	30.00-31.00
Cast iron borings	29.00-30.00
Cut structurals	45.00-46.00
Heavy turnings	39.00-40.00
Punchings & plate scrap	48.00-49.00
Electric furnace bundles	45.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	37.00-38.00
Heavy breakable cast...	37.00-38.00
Unstripped motor blocks	35.00-36.00
No. 1 machinery cast...	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt...	46.00-47.00
Rails, 2-ft. and under...	50.00-51.00
Rails, 18-in. and under...	51.00-52.00
Rails, random lengths...	47.00-48.00
Railroad specialties	49.00-50.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting...	39.00
No. 2 heavy melting...	34.00-34.50
No. 1 bundles	39.00-40.00
No. 2 bundles	32.00-33.00
No. 1 busheling	38.00-39.00
Machine shop turnings...	22.00-23.00
Mixed borings, turnings...	26.00-27.00
Short shovel turnings...	26.00-27.00
Cast iron borings	26.00-27.00
Low phos.	43.00-44.00
Alloy free, short shovel turnings	30.00-31.00
Electric furnace bundles	41.00-42.00

Cast Iron Grades

No. 1 cupola	43.50-44.00
Charging box cast	42.00-43.00
Stove plate	42.00-43.00
Heavy breakable cast...	37.00-38.00
Unstripped motor blocks	27.00-28.00
Brake shoes	36.00-37.00
Clean auto cast	45.00-46.00
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	43.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt...	46.00-47.00
R.R. Malleable	49.00-50.00
Rails, 3-ft. and under...	52.00-53.00
Rails, 18-in. and under...	50.00-51.00
Rails, random lengths...	48.00-49.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	49.00-50.00
Angles, splice bars	52.00-53.00
Rails, rerolling	53.00-54.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting...	41.00-42.00
No. 2 heavy melting...	34.00-35.00
No. 1 bundles	41.00-42.00
No. 2 bundles	33.00-34.00
Machine shop turnings...	22.00-23.00

Short shovel turnings...	27.00-28.00
Cast iron borings	27.00-28.00
Low phos.	47.00-48.00
Electric furnace bundles	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt...	46.00-47.00
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PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting...	41.00-42.00
No. 2 heavy melting...	37.00-38.00
No. 1 bundles	41.00-42.00
No. 2 bundles	Nominal
No. 1 busheling	41.00-42.00
Machine shop turnings...	27.00-28.00
Mixed borings, turnings...	32.00
Short shovel turnings...	32.00
Structurals & Plate...	45.00-46.00
Heavy turnings	39.50-40.50
Couplers, springs, wheels	50.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	40.00
Heavy breakable cast...	43.00
Unstripped motor blocks	29.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting...	33.00-34.00
No. 2 heavy melting...	29.00-30.00
No. 2 bundles	27.00-28.00
Machine shop turnings...	17.00-19.00
Mixed borings, short turnings	22.00-23.00
Low phos. (structural & plate)	37.00-38.00
Shovel turnings	22.50-23.50

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	22.50-23.00

DETROIT

No. 1 heavy melting...	31.00-32.00
No. 2 heavy melting...	26.00-27.00
No. 1 bundles	36.00-37.00
No. 2 bundles	23.00-24.00
No. 1 busheling	35.50-36.50
Machine shop turnings...	14.00-15.00
Mixed borings, turnings...	14.00-15.00
Short shovel turnings...	18.00-19.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	35.00-36.00
Stove plate	35.00-36.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Delivered consumer plant)

No. 1 heavy melting...	41.00
No. 2 heavy melting...	37.00
No. 1 bundles	41.00
No. 2 bundles	34.00
No. 1 busheling	41.00
Machine shop turnings...	22.00
Mixed borings, turnings...	22.00*
Short shovel turnings...	26.00*
Cast iron borings	22.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	38.00
Stove plate	29.00*
Burnt cast	29.00*
Heavy breakable cast...	37.00*
Unstripped motor blocks	30.00
Brake shoes	29.00*
Clean auto cast	38.00
Drop broken machinery	48.00

Railroad Scrap

No. 1 R.R. heavy melt...	42.00
Malleable	45.00
Rails, 18-in. and under...	53.00
Rails, random lengths...	45.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting...	36.00-37.00
No. 2 heavy melting...	34.00-35.00
No. 1 factory bundles...	37.00-39.00
No. 2 dealer bundles...	35.00-37.00
No. 2 bundles	30.00-32.00
No. 1 busheling	36.00-37.00
Machine shop turnings...	16.00-18.00
Mixed borings, turnings...	16.00-18.00
Short shovel turnings...	17.00-19.00
Cast iron borings	16.00-18.00
Cut structurals	40.00-42.00
Electric furnace bundles	39.00-40.00

Cast Iron Grades

No. 1 cupola	38.00-40.00
Stove plate	32.00-34.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	40.00-42.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt...	39.00-41.00
R.R. Malleable	39.00-41.00
Rails, 2-ft. and under...	50.00-52.00
Rails, 18-in. and under...	52.00-54.00
Angles, splice bars	47.00-49.00
Rails, rerolling	47.00-48.00

BIRMINGHAM

No. 1 heavy melting...	29.50-30.50
No. 2 heavy melting...	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	25.00-26.00
Machine shop turnings...	20.75-21.75
Short shovel turnings...	22.75-23.75
Cast iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	38.00-39.00
Charging box cast	30.00-31.00
Stove plate	34.00-35.00
Heavy breakable cast...	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt...	35.00-36.00
Rails, 2-ft. and under...	45.00-46.00
Rails, random lengths...	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting...	32.00
No. 2 heavy melting...	32.00
No. 1 bundles	33.00
No. 2 bundles	30.00
Machine shop turnings...	18.00
Short shovel turnings...	20.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	34.00-35.00
Heavy breakable cast...	30.00-32.00
Unstripped motor blocks	30.00-31.00
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	37.00-39.00

Railroad Scrap

Malleable	36.00
Rails, 18-in. and under...	53.00-54.00
Rails, random lengths...	39.00-40.00
Uncut tires	44.00
Angles, splice cars	47.00-48.00
Rails, rerolling	45.00

BUFFALO

No. 1 heavy melting...	40.50-41.00
No. 2 heavy melting...	38.00-38.50
No. 2 bundles	36.00-36.50
No. 1 bundles	40.50-41.00
No. 2 busheling	40.50-41.00
Machine shop turnings...	23.50-24.00
Mixed borings, turnings...	27.50-28.00
Short shovel turnings...	29.50-30.50
Cast iron borings	27.50-28.00
Low phos.	44.50-45.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	38.00-38.50
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths...	45.75-46.75
Rails, 2 ft. and under...	51.75-52.75

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting...	30.00-31.00
No. 2 heavy melting...	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	22.00-23.00
Machine shop turnings...	17.00-17.50
Mixed borings, turnings...	19.00-20.00
Short shovel turnings...	19.50-20.50
No. 1 cast	34.00-35.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast...	43.00-44.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting...	32.00
No. 2 heavy melting...	29.00
No. 1 bundles	32.00
No. 2 bundles	26.00
No. 3 bundles	22.00
Machine shop turnings...	15.00
Mixed borings, turnings...	15.00
Short shovel turnings...	15.00
Electric furnace, No. 1	40.00-41.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast...	36.00-38.00
Unstripped motor blocks	29.00
No. 1 wheels	38.00-40.00

Railroad Scrap

Rails, random lengths...	38.00
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SAN FRANCISCO

No. 1 heavy melting...	28.00
No. 2 heavy melting...	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings...	10.00
Mixed borings, turnings...	29.00
Short shovel turnings...	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast...	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt...	37.00
Malleable	55.00
Rails, 3-ft. and under...	42.00
Rails, 18-in. and under...	45.00
Rails, random lengths...	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting...	28.00
No. 2 heavy melting...	20.00
No. 1 bundles	25.00
No. 2 bundles	20.00
Machine shop turnings...	10.00

Cast Iron Grades

(F.o.b. Shipping Point)

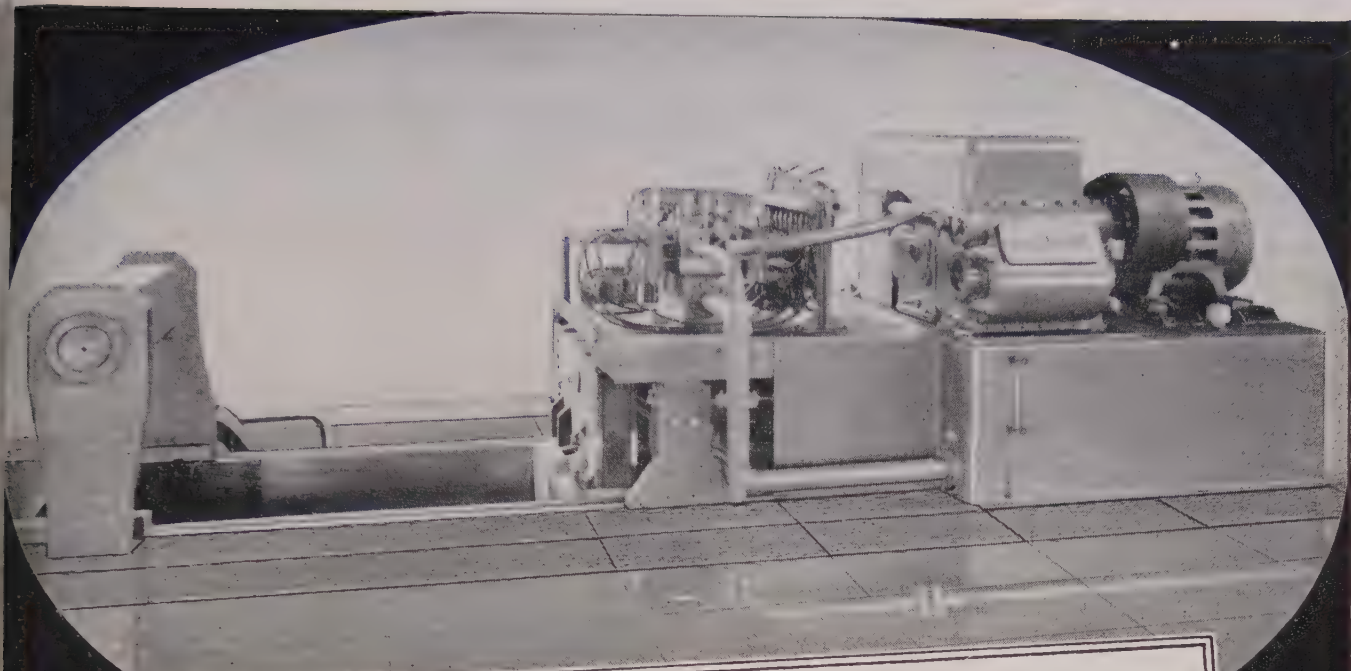
No. 1 cupola	40.00-43.00
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HAMILTON, ONT.

(Delivered Prices)

Heavy Melt.	\$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles ..	31.50
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	28.50
Rails, Remelting	35.50
Rails, Rerolling	38.50
Busheling	28.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings ..	28.50
Cast Iron Grades	
No. 1 Machinery Cast...	50.00

† F.o.b., shipping point.



Self-Contained, Triple Compression
LOGEMANN
SCRAP PRESSES

*...give you compact,
 high density bales ... at low cost!*

LOGEMANN

Also specializes in

**WASTE PAPER
 BALERS**

*for Industrial
 Applications*

and in

**HIGH PRESSURE
 PUMPS**

*... for pressures from 2000 to
 50,000 p.s.i. for press operation,
 hydrostatic tests, and
 similar applications.*

**You Conserve Floor Space and Piping
 with this Compact Installation**

Here is a combination of tried and tested units expertly assembled to reduce floor space requirements to a minimum. Features include a big box, high speed operation, and high density bales. Various box sizes are available to meet maximum scrap and minimum bale dimensions.

Also available are various sizes and types of pumps and operating valves to meet output requirements. Logemann Scrap Presses can be equipped with loading hopper in which the scrap charge can be prepared while the press is going through the operations on the preceding bale. Compressed bales are delivered at floor level for ejection to conveyor, steel chute, or into accumulation pit.

Write for Complete Details

LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 10, WISCONSIN

Pig Iron . . .

(Continued from Page 217)

before suspensions for holidays because inventories are adequate and they believe they will have no particular difficulty in getting the iron they need throughout the summer.

Scandinavian off-grade foundry iron—low in silicon and high in phosphorus—is again being offered at around \$54, f.o.b. cars.

Scrap . . .

Scrap Prices, Page 218

Philadelphia—Prices on all leading grades of steel and cast scrap are firming up at current levels. Except for a slight reduction in unstripped motor blocks to \$29, delivered, and for a highly nominal situation in No. 2 bundles, with possibly lower prices should representative business develop, all grades are steady. Some trade interests regard the market as being at bottom on the present movement.

Steel scrap buying is inactive and steady. Mills appear to be quite content to take in steel at a rate that should maintain existing inventories.

Pittsburgh—Scrap brokers are somewhat more optimistic. There is more interest in dealer scrap, although actual purchases are small. Some mills indicate a willingness to broaden their purchases during June beyond the industrial scrap commitments they have been satisfying. Dealers have not been anxious to sell at present prices, and mills are choosier about the quality of scrap they buy.

Boston—Prices for secondary grades of steelmaking scrap are soft with pre-control differentials covering a wider spread. Consumers have satisfactory inventories and are not buying heavily. Most users are satisfied to trail the market with orders balancing melt. This will be lower with most consumers next month.

New York—Scrap brokers' buying prices, for the first time in weeks, are unchanged throughout the list. Some think this may mark the bottom of the recent trend; others believe it is still a bit too early to say.

Cast scrap consumption is relatively less active than for steel.

Buffalo—Scrap dealers are anxiously awaiting the leading mill consumer in this area to place new business as prices have declined \$1 to \$2 a ton as a result of weakness in other areas. Their yard stocks are increasing. Weakness was augmented by an embargo on shipments to one leading consumer while other buyers refused shipments of turnings. In addition,

water borne receipts totaled more than 12,000 tons and more are expected.

Cleveland—Brokers are waiting for the closing of the large Ohio and Michigan lists. Indications are that higher prices will be established than those currently quoted. In the absence of mill buying, prices are nominally unchanged.

Cincinnati—A quiet market prevails here with lower prices in mixed borings and turnings and cast iron borings being the only activity. Local consumers are determining the prices they will pay for scrap for June delivery. The price decline seems to have been halted.

Chicago—Prices of scrap continue to settle, although the rate has slowed a bit in the face of weak demand and plentiful supply. There is no reason to believe the downward drift has ended. Only small tonnage of steelmaking grades are involved in occasional transactions.

Dealers' inventories are expanding, but not as fast as might be expected because depressed prices are shrinking collections. Blast furnace and foundry grades grow weaker too.

St. Louis—Scrap quotations remain stationary and nominal under a complete absence of buying. Mill stocks drift lower each week but are still comfortable. Receipts at dealers' yards are drastically off as remote points refuse to ship on an at-the-market price basis. Shipments of industrial scrap promise to fall soon as the plant vacation season nears. Borings and turnings are extremely soft. Large and steady railroad offerings stir little interest.

Los Angeles—Trade experts estimate that consumption of steelmaking scrap by mills for first four months of this year, compared with like period last year, is reduced as much as 75 per cent. Torrance and Pittsburg plants of Columbia-Geneva Steel Division for the period are using 9.3 per cent less; Geneva plant uses hot-metal only, no scrap.

For the month of April, consumption of scrap by the two U. S. Steel plants was 11,829 tons of compressed bales, 4443 tons of No. 2 heavy melting, 2017 tons of turnings, and 1525 tons of No. 1 heavy melting, totaling 19,814 net tons, or 26 per cent less than in April last year.

Vancouver, B. C.—While no export licenses are available for British Columbia heavy melting scrap, the Canadian government has announced that such permits will be granted for agricultural and automobile scrap from Saskatchewan and Alberta. This will move through British Columbia to tidewater on special rail export rates. Principal local buyers are

FOR SALE:

- Cincinnati Washer—Single Stage, 24" wide Steel Belt Type. Opening 24" x 13" Variable Speed drive on Belt.
1. Duct opening for forced air dry-off could be adapted with "heat on" dry-off.
 2. 24' long, 6' wide, 6' high less duct.
 3. Steam heated.
 4. Dual control on upper and lower pressure can be used independently.
 5. "V" Jet nozzles.
 6. Complete with pumps and motors.
 7. Tank size 20' x 4" Capacity 1200 gal.
 8. 3 years old. Original cost \$4500.00—will sell for \$2000.00.

Reply to: Art Dionne
c/o Moe Light, Inc.
700 Oak St.,
Fort Atkinson, Wis.

For Sale

EQUIPPED MODERN STEEL FABRICATING PLANT

Floor area, 30,000 sq. ft., tract of land, 130,000 sq. ft. Overhead Cranes, height 30'. 130 miles west of Chicago, Ill. Reply Box 737, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR SALE

98,000 5/8" x 1 1/2" No. 2 Round Head Plow Bolts—Square Nuts. In original packages. Substantial Discount. If interested, write—

Cleveland-Cliffs Iron Company
Purchasing Department
Ishpeming, Michigan

HOMO-CARB

Leeds Northrup Carburizing Furnace 35 x 48 inches. Complete with instrument panel, controls and two sets of adjustable quenching fixtures.

RICHARDSON HEAT TREATING CO.
7100 W. Jefferson Ave., Detroit 17, Mich.

FOR SALE

(3) 25 Ton HENRY & WRIGHT DIEING PRESSES
1 1/2" Strokes—With Double Roll Feeds.
One with Scrap Cutter.

(Send for list of other Presses
and Metal Working Mach.)

SEABOARD STEEL CO., New Haven, Conn.



10 to 12 ft. length
ALL METALS

Also Screw Machine
Products to Order

EASTERN

Machine Screw Corp.
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Makers of H & G
Die Heads

transformers built to your specifications

Take advantage of our more than 40 years' experience in manufacturing and re-building industrial transformers. Complete satisfaction guaranteed.

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5315 Hetzel St., Cincinnati 27, Ohio

RAILROAD EQUIPMENT—FOR SALE

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RECONDITIONED

STANDARD GAUGE FREIGHT CARS

Box, Steel Sheathed, 40-Ton Capacity

Box, Double Sheathed, 50-Ton Capacity

Box, Single Sheathed, 50-Ton Capacity

Flat, 50-Ton, Steel Underframe, 40'6" Long

Hoppers, All-Steel, 70-ton, Triple Hopper Cross Dump

Gondolas, Composite, or All Steel 50-Ton and 70-Ton

Hoppers, Twin, All-Steel, 50-Ton, Cross Dump

Ore Hoppers, All-Steel, 50-Ton, Heavy Duty

Tank, 3,000-Gallon, High Pressure

Tank, 8,000-Gallon, Coiled and Non-Coiled

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

70-Ton Capacity, Length 60'0", All-Steel, Fishbelly Underframes

STANDARD GAUGE AIR DUMP CARS

Side Dump, 20-Yd., 40-Ton, Lift Door

End Dump, 20-Yd., 50-Ton, Drop Door

Side Dump, 30-YD., 50-TON, DROP DOOR

STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

300 H.P., 70-Ton, Type 0-4-4-0

NEW AND RELAYING RAIL

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IRON & STEEL PRODUCTS, INC.

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STORAGE TANKS

6,000 Gallon

8,000 Gallon

10,000 Gallon

"ANYTHING containing IRON or STEEL"

WANTED TO BUY

24" or 18" Marvel Hack Saw as
manufactured by Armstrong
Blum, complete with roller feed
tables and carriage. Advise age,
condition, location and price.

GLAZER STEEL CORPORATION
KNOXVILLE, TENNESSEE

CLASSIFIED

Positions Wanted

PLANT MANAGER—15 years' experience in
Plant Management, Production Control, Account-
ing Problems, Manufacturing Development, etc.
Small manufacturing plant preferred. Age 45,
married, family. Write Box 738, STEEL, Pen-
ton Bldg., Cleveland 13, Ohio.

PLANT MANAGER

Offers broad general administrative and extra-
ordinary manufacturing ability. Can develop
high production with economic cost. Very suc-
cessful in establishing simplified procedure and
personnel training. Excellent record in develop-
ment of methods and co-ordination. Any prod-
uct involving metal working, machining and as-
sembly. Write Box 741, STEEL, Penton Bldg.,
Cleveland 13, Ohio.

PLANT MANAGER or MULTI-PLANT CO-OR-
DINATOR. Successful record of accomplishment
in organization and management functions.
COST reduction through installation and control
of tooling-methods-quality-PRODUCTION PLAN-
NING-MATERIAL-budgets and expense analysis-JOB
evaluation-labor relations-and supervisory
training. M.I.T. graduate with 20 years' prac-
tical experience in sheet metal and metal turning
fabrication. Write Box 742, STEEL, Penton
Bldg., Cleveland 13, Ohio.

Help Wanted

MECHANICAL ENGINEER: Junior with prac-
tical experience bar mill, iron foundry and ma-
chine shop operation leading to executive posi-
tion. Reply complete resume stating basic salary
expected with added incentive compensation.
Address Box 727, STEEL, Penton Bldg., Cleve-
land 13, Ohio.

FOR CLASSIFIED RATES

And Further information write
STEEL, Penton Bldg., Cleveland 13, O.

SALESMAN WANTED

Steel casting firm desires salesman with
background to sell carbon, low alloy and
stainless castings on eastern seaboard.
Firm now producing pressure castings. Has
X-Ray equipment and complete facilities.
State qualifications in reply. Write Box 739,
STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURERS' AGENTS WANTED

by manufacturer of Lifting Mag-
nets and Magnetic Devices —
Standard and Special applica-
tions. — Write giving complete
information to:

Box 733, STEEL

Penton Bldg.,

Cleveland 13, Ohio

EXPERIENCED STEEL MEN WANTED

- CHIEF METALLURGIST
- SERVICE METALLURGISTS
- CHEMICAL ANALYSTS
- STEEL SPARK TESTER
- BLOOMING-BAR MILL
SCHEDULER
- INQUIRY & ORDER PRICE
CLERK
- SALESMEN—For These Territories
 1. Cincinnati—Indianapolis
 2. Chicago—Milwaukee
 3. St. Louis—Southern Illinois

Excellent opportunities with a new com-
pany specializing in electric furnace pro-
duction and rolling of high quality killed
carbon and alloy steels.

Apply by letter stating complete qualifi-
cations and salary expected. All com-
munications will be held in strictest con-
fidence. Address inquiries to:

PERSONNEL DIRECTOR
GREEN RIVER STEEL CORPORATION
OWENSBORO, KENTUCKY

WANTED

SHEET GALVANIZING MACHINERY

New or used—Complete or parcel. Equip-
ment suitable for galvanizing steel 30
Gauge up to 24 Gauge sheets, 24" to 36"
wide by 6' to 12' length.

Quote for complete equipment or each ma-
chine separately giving full specifications
and particulars.

Address Box 745, STEEL

Penton Bldg.,

Cleveland 13, Ohio.

WANTED

A MACHINE SHOP WITH OPEN TIME

A modern machine shop having precision
type equipment to work with steel fabricat-
ing and welding shop to machine to close
tolerances welded units on a production
basis.

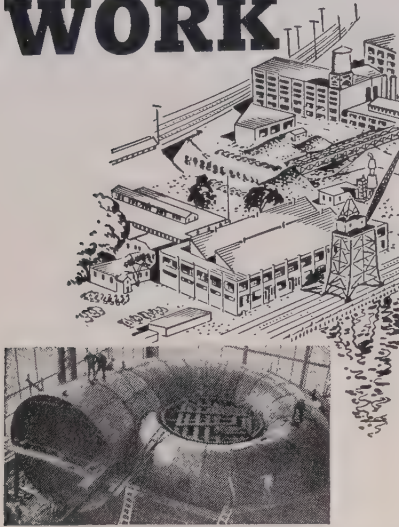
Facilities should include jig borers, vertical
boring mills, and precision grinding equip-
ment. Welded units should be supplied ready
for machining.

Address Box 743, STEEL

Penton Bldg.,

Cleveland 13, Ohio

STEEL PLATE WORK



TURBINE CASINGS

and other heavy steel plate work are fabricated at Pusey-jones of Hot-Rolled, High-Strength, Low-Alloy Steel.

Every facility for large scale metal fabricating: — Heavy plate shop — Rolls — Shears — Bending furnaces. Stress relieving furnace 33'x18'x16' up to 2100°F. Machine shop for facing, turning, and boring. 50 ton capacity gray iron foundry. Deep-water transportation on one side, the Pennsylvania RR on the other. Talk to our development engineers.

Metals Fabrication Division
THE PUSEY AND JONES CORP.
506 Front St., Wilmington, Del.
Established 1848

PUSEYJONES

opposed to export desiring to hold interior scrap as a reservoir.

Japan is reported eager for all available exports. That country continues to purchase British Columbian ore. Supplies in the local market are ample and demand is good. Heavy melting here is quoted at about \$23, gross, cast iron at \$34 and electric furnace at \$36. Local mills are purchasing all scrap offered, although there is an oversupply of cast iron at the moment.

Government regulations permit the export of a certain volume of electric scrap but this does not apply to open-hearth. Not long since a shipment of No. 2 bundles to the American side was rejected because of an excess of foreign material. It was forwarded to Japan.

San Francisco—The scrap market continues on the toboggan, pricewise. Resuming the long ride downward of the last several months, the market reached a new low for the movement last week when all grades slumped \$1 a ton. And still the bottom cannot be seen. Industry is generating a terrific amount of scrap and stocks at mills are extremely high.

Seattle—In view of the abundance of scrap in this area, current heavy inventories contrasting with the scarcity of material less than a year ago, several local exporters are seeking federal licenses to ship overseas, Japan in particular, where there is a ready market. However, officials have been constant in refusing such licenses.

The supply of scrap indicates the return of a buyers' market. No. 2 bundles are said to be a drug at this time, the larger buyers refusing to accept this grade. During the war, with the government urging their installation as a war measure, seven baling presses, representing a heavy investment, were placed in Seattle, Tacoma, Wash., and Portland, Oreg., yards. The present situation is beginning to hurt these dealers and with exporting houses they hope an outlet for bundles will be opened overseas. Price of No. 2 bundles is down to \$26.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

- 9000 tons, Granville bridge, Vancouver, B. C., to Western Bridge & Steel Fabricators Ltd., Vancouver.
- 5600 tons, section, state thruway, Oneida county, New York, to Harris Structural Steel Co., New York.
- 5000 tons, 50-mile transmission line for Kitimat project, British Columbia, to Western Bridge & Steel Fabricators Ltd., Vancouver, B. C.
- 3000 tons, project for British Columbia Electric Co., to Western Bridge & Steel Fabricators Ltd., Vancouver, B. C.
- 640 tons, truss type drawbridge for Great Northern Railway, to Manson Construction & Engineering Co., Seattle.

- 500 tons, addition to Canadian Bank of Commerce, Vancouver, B. C., to Western Bridge & Steel Fabricators Ltd., Vancouver.
- 850 tons, extension, Beaumont station, Metropolitan District Commission, Boston, to American Bridge Division, U. S. Steel Corp., Pittsburgh; Singarella Construction Co., Boston, general contractor.
- 110 tons, grade separations, Portland, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me.; Gil Wyner Co. Inc., Malden, Mass., general contractor.
- 100 tons, including 60 tons for Washington state viaduct, bulkhead at Kodiak, Alaska, and miscellaneous to Isaacson Iron Works, Seattle.
- 100 tons, bridge at East Oregon hospital, to West Coast Steel Works, Portland, Oreg.
- 100 tons, steel partitions, Oregon state penitentiary, Salem, to E. F. Hauserman Co., Cleveland.
- 100 tons, substation steel for Bonneville Power Administration, to Screw Machine Products Co., Portland, Oreg.

STRUCTURAL STEEL PENDING

- 5000 tons, state thruway bridge work, Herkimer county, New York; bids June 11.
- 2000 tons, state bridge (not identified with thruway program), Rochester, N. Y.; bids postponed until June 4.
- 1350 tons, thruway section, Rockland county, New York; bids June 11.
- 1080 tons, state thruway bridge work, between Herkimer and Onondaga counties, New York; bids June 11.
- 1000 tons, hangar, Logan airport, Boston.
- 985 tons, 12-in. I-beams for welded structures, bids June 3, Corps of Engineers, Pittsburgh.
- 850 tons, electronics building, naval shipyard, Boston; bids in.
- 575 tons, angles, beams and channels, Corps of Engineers, Pittsburgh; bids June 4.
- 330 tons, bridge, Erving-Montague, Mass.; bids June 9, Boston.
- 225 tons, central heating unit, air station, Dover, Del.; Frederick Raff Co., Hartford, Conn., low on general contract.
- 125 tons, state bridge work, Luzerne county, Pennsylvania; bids June 18.
- 100 tons, 250-ton electric travelling crane, bids June 11, Corps of Engineers, Omaha, Nebraska.

REINFORCING BARS . . .

REINFORCING BARS PLACED

- 310 tons, Navy project, Bangor, Wash., to J. D. English Steel Co., Tacoma, Wash.
- Hall-Atwater Co., Seattle, general contractor.
- 250 tons, bridges and highway, Portland, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me.; Gil Wyner Co., Malden, Mass., general contractor.

REINFORCING BARS PENDING

- 523 tons, Garden state parkway, contract No. 68, section 10, Ocean county, New Jersey; bids June 11.
- 435 tons, Garden state parkway, contract No. 64, section 8, Ocean and Monmouth counties, New Jersey; bids June 8.

PLATES . . .

PLATES PENDING

- 500 tons or more, floating drydock; bids June 10, Bureau of Yards & Docks, Navy, Arlington, Va.
- 125 tons, 250,000-gallon tank, 100-ft tower, naval station, Key West, Fla.; bids June 3.
- public works officer, naval base, Charleston, S. C.

RAILS, CARS . . .

RAILROAD CARS PLACED

- Chesapeake & Ohio, 100 fifty-ton pulp wood cars, to own shops at Russell, Ky.

RAILROAD CARS PENDING

- Erie, 700 box cars and 300 drop-end gondolas; purchase authorized.

CABLE . . .

ALUMINUM CABLE PLACED

- 8500 tons and accessories, to Aluminum Co. of America, Pittsburgh, \$3,984,862, by Bonneville Power Administration, Portland, Oreg.

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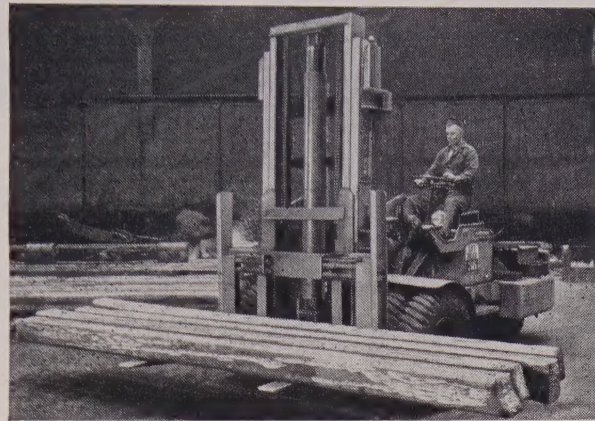
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HEAVY-DUTY FORK LIFTRUK ON THE PRODUCTION LINE!



Here you see a LIFTRUK in The Timken Roller Bearing Company plant, Canton, Ohio, carrying a load of blooms. This is but one of hundreds of important movements required of a LIFTRUK in the metal-production fields.

LIFTRUKS are available in 5 - 7½ - 10 - 15 Ton capacities. Larger sizes to order.

SEND FOR BULLETIN 77



LIFTRUK features = 1—Rugged dead axle for traction wheels. 2—Extra large elevating hydraulic cylinders. 3—Oversize engine clutch. 4—Generous sturdy construction of tiering frames and fork apron—these and other LIFTRUK features assure you of production materials handling and elimination of shut downs or slow ups.

Let our sales engineers give convincing proof of LIFTRUK performance to meet *your* specific needs.

Also available with Boom, Ram, Scoop and other attachments.

SILENT HOIST & CRANE CO.

849 63rd STREET, BROOKLYN, N. Y., U. S. A.

Combines
design and
durability



**Hendrick
Perforated
Metal**



Give a new touch and add to saleability all at once—fabricate Hendrick Perforated Metal into your product design. Hendrick Perforated Metal not only enhances product beauty but it increases its resistance to wear as well.

Select from hundreds of attractive designs in commercially rolled metals and gauges to fit your needs to a "tee." Available with round, square, diamond, hexagonal or slotted perforations in plain or panel effects. Write for more information.



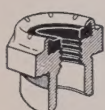
Hendrick

MANUFACTURING COMPANY

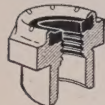
30 DUNDAFF ST., CARBONDALE, PA. • Sales Offices in Principal Cities
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids



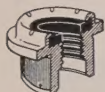
.. or Released
in an Instant



CLINCH TYPE



INSTRUMENT
MOUNTING



SPLINE TYPE



THIN TYPE



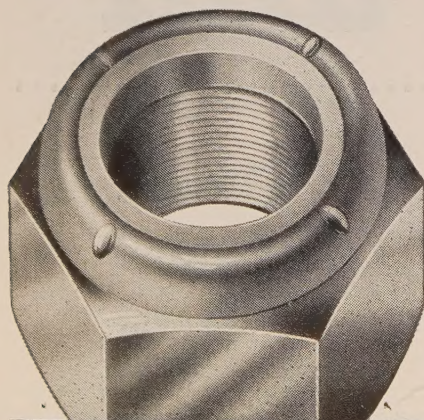
STANDARD

Faster assembly . . . no more failures of fasteners. GREER STOP NUTS hold firm against jolts, shocks, shimmy, wobbles . . . any vibration, any kind.

Bolt threads are gripped tightly . . . these famous nuts never work loose. Yet an ordinary hand wrench gives instant release. The tough, built-in GREERCOID collar does it . . . and seals against fluid leakage, too!

Study your fastener problem. Over 3000 types and sizes. Consult GREER. Proved on thousands of products. Meets gov't and military specifications.

Write
GREER STOP NUT CO.
2620 Flournoy, Chicago 12, Ill.



GREER
Stop Nuts

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Farval solves tough lubrication problem at coal cleaning plant

BEARINGS on a rotary car dumper are punished severely, require careful, thorough lubrication. Hit and miss hand-oiling is wasteful and seldom thorough or complete. To stop and grease the equipment by hand also ties up coal production. Some better method is needed to lubricate a rotary dumper adequately and surely, regularly and quickly, without stopping coal movement.

Management of one coal company found the answer in Farval Centralized Lubrication. Now with a few quick strokes and within seconds, a man lubricates every bearing on the car dumper from one convenient spot. It's that easy—and that fast!

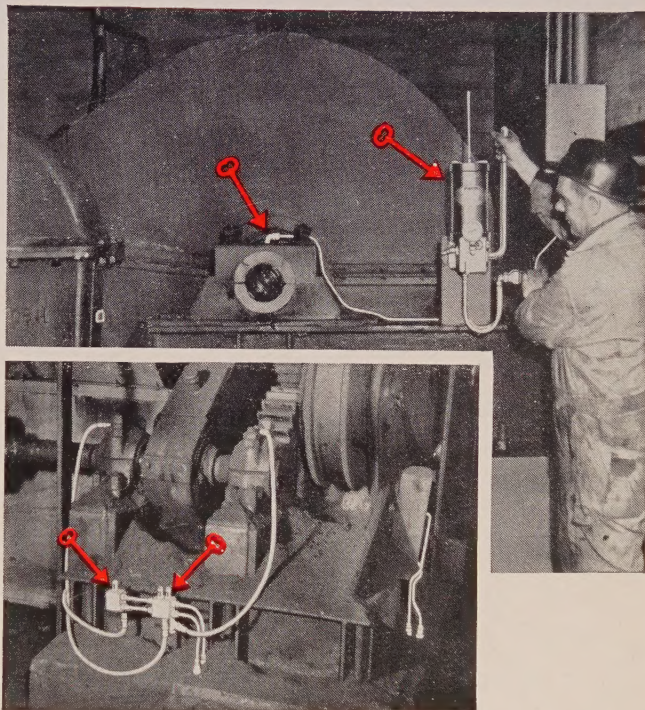
But the management of this mining company didn't stop here. They also put Farval systems on the other equipment in the preparation plant, including media densifiers, coarse screen shakers, separators, conveyors, crushers. Now machines are protected at all times, above or below ground, under all conditions. And production schedules are free of shutdowns for lubrication and from bearing failures caused by lack of oil.

Farval is the original Dualine system of centralized lubrication. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its wide valve ports and full hydraulic operation, Farval unfailingly delivers grease or oil to each bearing—as much as you want—as often as desired. Indicators at every bearing show that each valve has functioned.

Farval systems are designed for all kinds of mechanical equipment, big or small. Write today for free Bulletin 26. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

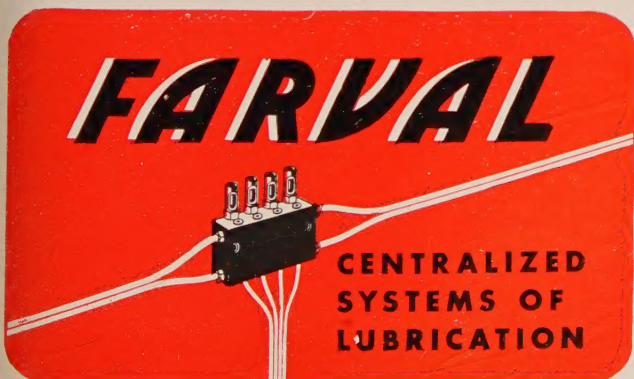
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

**FARVAL—Studies in
Centralized Lubrication
No. 143**



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

Photograph above shows workman lubricating Barney hoist which moves railroad cars into rotary dumper, and below, lubrication valves on trunnion under dumper.



Modern Reversing Slabbing-Blooming Mills



MESTA 46" REVERSING SLABBING-BLOOMING MILL

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

*Designed
and Built
by*

**M
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